

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

NICHIA CORPORATION

v.

EVERLIGHT ELECTRONICS CO., LTD., ET
AL.

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Case No. 2:13-CV-702-JRG

**CLAIM CONSTRUCTION
MEMORANDUM OPINION AND ORDER**

On November 17, 2014, the Court held a hearing to determine the proper construction of the disputed claim terms in United States Patent Nos. 7,432,589 (“the ‘589 Patent”); 7,462,870 (“the ‘870 Patent”); 7,521,863 (“the ‘863 Patent”); and 8,530,250 (“the ‘250 Patent”) (collectively, the “Asserted Patents”). After considering the arguments made by the parties at the hearing and in the parties’ claim construction briefing (Dkt. Nos. 52, 60, and 65), the Court issues this Claim Construction Memorandum Opinion and Order.

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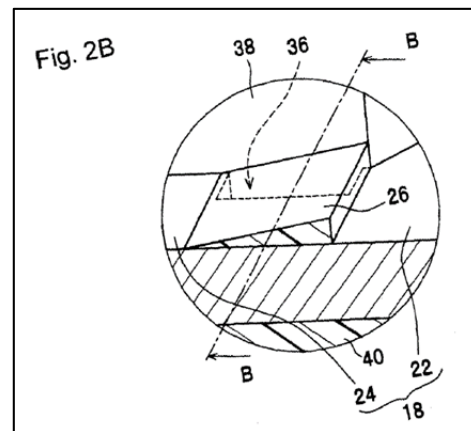
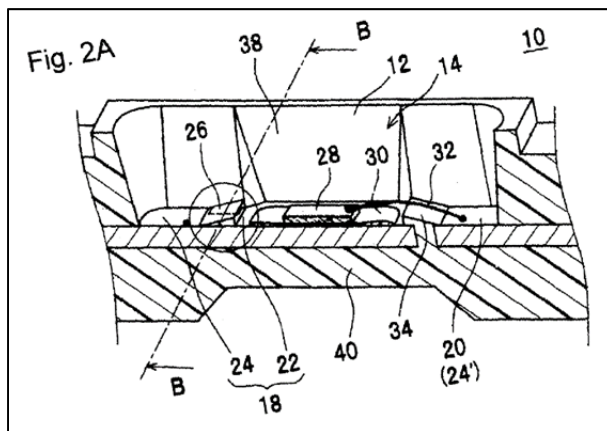
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I. BACKGROUND

A. The '589 Patent

The '589 Patent is titled Semiconductor Device, it was filed on April 17, 2007, and issued on October 7, 2008. The '589 Patent generally relates to a semiconductor device capable of preventing an adhesive for die bonding from flowing to a wire bonding area. *See* '589 Patent at Abstract.¹ The specification generally discloses semiconductor devices having a semiconductor element 28 that is electrically connected to a first lead electrode 18 and a second lead electrode



¹ The Abstract of the '589 Patent follows:

The present invention provides a semiconductor device capable of preventing an adhesive for die bonding from flowing to wire bonding area. The semiconductor device of the present invention comprises a semiconductor element 28 having a pair of electrodes, a housing 12 having the recess 14 for accommodating the semiconductor element 28, a first lead electrode 18 and the second lead electrode 20 which are exposed on the bottom of the recess 14, an adhesive layer 30 for die bonding between the semiconductor element 28 and the first lead electrode 18, and electrically conductive wires 32 for wire bonding between one electrode of the pair of electrodes of the semiconductor element and the first lead electrode 18 and between the other electrode and the second lead electrode 20, wherein the housing 12 has the wall 26 formed to extend across the bottom surface of the recess 14 so as to divide the surface of the first lead electrode 18 into a die bonding area 22 and a wire bonding area 24, and the first lead electrode 18 has the notch 36 which is formed by cutting off a portion of an edge of the first lead electrode 18 and located at least just below the wall 26, while the wall 26 and the bottom portion 40 of the housing 12 are connected to each other through the notch 36.

20. *See, e.g.*, '589 Patent at Figures 2A² and 2B³.

The specification states that the disclosed embodiments include housing 12, which has recess 14. '589 Patent at 5:53–54. The specification adds that the first lead electrode 18 and the second lead electrode 20 are exposed on the bottom surface 16 of the recess 14. *Id.* at 5:54–56. The specification further states that “[t]he semiconductor element 28 is fixed on the substrate side thereof onto the die bonding area 22 by means of an adhesive layer 30 formed from an adhesive for die bonding, and electrodes formed on the semiconductor side are connected to the wire bonding areas 24, 24' by means of electrically conductive wires 32.” *Id.* at 5:65–63. The specification further discloses that “[a] first wall 26 [is] formed on the surface of the first lead electrode 18 so as to traverse the first lead electrode 18” and “a second wall 34 is formed to protrude between the first lead electrode 18 and the second lead electrode 20.” *Id.* at 5:58–63.

The specification further states that the first and second walls 26, 34 are formed integrally with the housing 12. *Id.* at 5:63–65. The specification adds that “[t]he first and second walls 26, 34 are formed with such a height as the adhesive components of the adhesive used to form the adhesive layer 30 do not bleed from the die bonding area 22 into the wire bonding areas 24, 24' and wire bonding with the electrically conductive wires 32 is not hampered.” *Id.* at 6:4–8. The specification adds that “a rectangular notch 36 is formed on the edge of the first lead electrode 18 at a position where the first wall 26 is to be formed,” and that “the first wall 26 and the bottom portion 40 of the housing 12 are firmly connected to each other through the notch 36.” *Id.* at 6:23–28.

² Figure 2A is perspective sectional view of the semiconductor device of a first embodiment.

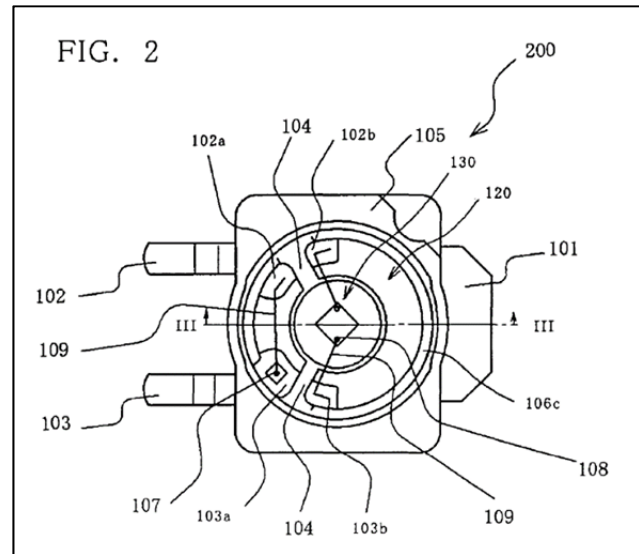
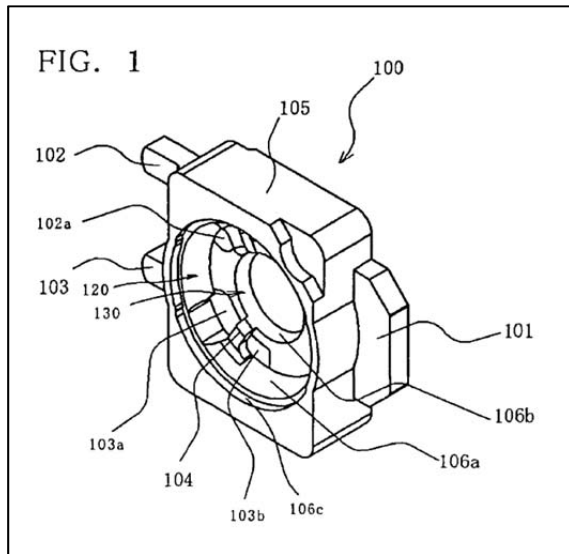
³ Figure 2B is a partially enlarged view of a part of Figure 2A.

Plaintiff brings suit alleging infringement of claims 1 and 2 of the '589 Patent. Claim 1 of the '589 Patent is representative of the asserted claims and recites the following elements (disputed terms in *italics*):

1. A semiconductor device comprising:
a semiconductor element having a pair of electrodes;
a housing having a recess for accommodating the semiconductor element;
a first lead electrode and a second lead electrode exposed on the bottom surface of said recess;
an adhesive layer for die bonding between the semiconductor element and the first lead electrode; and
electrically conductive wires for wire bonding between one electrode of the pair of electrodes of the semiconductor element and the first lead electrode and between the other electrode and the second lead electrode,
wherein the housing has at least one *wall formed to extend across the bottom surface of the recess* so as to divide the surface of the first lead electrode into a die bonding area and a wire bonding area;
the first lead electrode has a *notch which is formed by cutting off a portion of an edge of the first lead electrode* and located at least just below the wall; and
the wall and the bottom portion of said housing are connected to each other through the notch.

B. The '870 Patent

The '870 Patent is titled Molded Package and Semiconductor Device Using Molded



Package, it was filed on March 23, 2006, and issued on December 9, 2008. The ‘870 Patent generally relates to a semiconductor device that includes a molded package, a semiconductor component, and an encapsulating member covering the semiconductor component. *See* ‘870 Patent at Abstract.⁴ The specification generally discloses light emitting devices that include a molded member 100, which includes recesses 120 and 130 that have bottom surfaces and side surfaces 106a and 106b. ‘870 Patent at 6:16-23 Figures 1⁵ and 2⁶.

The specification states that the devices include a “second metal member 102 and [a]

⁴ The Abstract of the ‘870 Patent follows:

A molded package comprises at least a first metal member, a second metal member, and a third metal member. Each member includes an end portion inserted into a mold member where a recess is formed and another end portion protruding from an outer wall of the mold member. A portion of each main surface of the metal members is exposed from the mold member in the bottom of the recess. A portion of each main surface can be also divided into at least two bonding regions by a wall portion comprising part of the mold member. A semiconductor device of the present invention comprises the molded package, a semiconductor component, and an encapsulating member covering the semiconductor component, and has a high reliability.

⁵ Figure 1 is perspective view of a molded package of a first embodiment.

⁶ Figure 2 is a top view of a semiconductor device of a first embodiment.

third metal member 103 [that] are used as the lead electrodes for supplying electric power to the light emitting element 108 and the protective element 107 being housed in the recess formed in the main surface of the molded package 100.” ‘870 Patent at 6:50–54. The specification further states that “a part of the mold member 105 forming the inner wall of the first recess 120 extends toward the second recess 130 as the wall portion 104, and a part of the wall portion 104 extends approximately to the same plane with the inner wall 106b. Thus, the exposed main surfaces of the metal members are divided.” *Id.* at 6:62–7:3. The specification further states that “[t]he divided main surfaces have a plurality of bonding regions of 102a, 102b, 103a, and 103b. That is, a region where a conductive wire used for connecting to a semiconductor component to be wire bonded ...” *Id.* at 7:4–8.

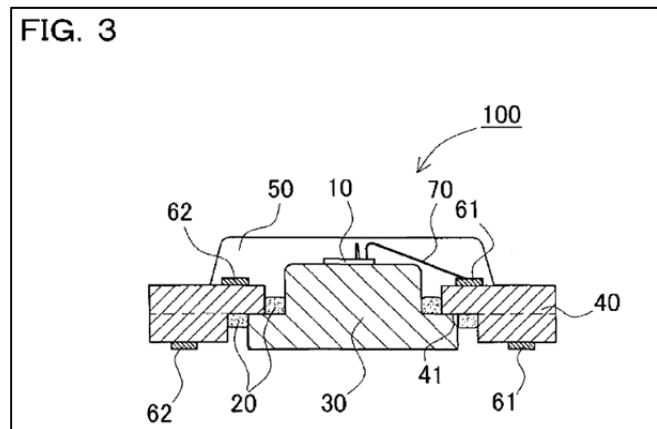
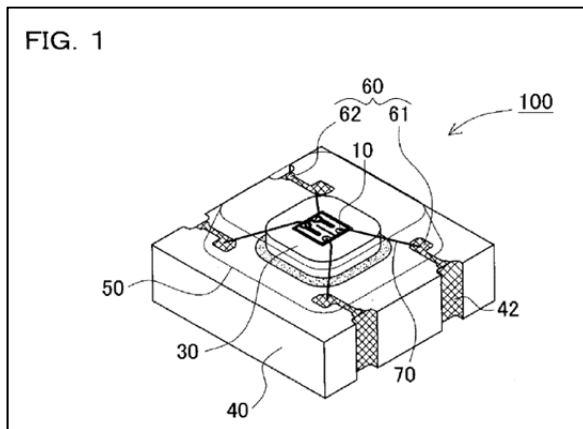
Plaintiff brings suit alleging infringement of claims 1, 2, 3, 5, 7–11, 23, 28, 30, 35, and 36 of the ‘870 Patent. Claim 1 of the ‘870 Patent is representative of the asserted claims and recites the following elements (disputed terms in italics):

1. A molded package for a light emitting device comprising:
 - a molded member having a recess formed therein with a bottom surface and a side surface;
 - a positive lead electrode partially disposed on the bottom surface and *adjacent to the side surface in the recess* and extending outwardly from said molded member;
 - a negative lead electrode partially disposed on the bottom surface and *adjacent to the side surface in the recess* and extending outwardly from said molded member;
 wherein a portion of said positive lead electrode and a portion of said negative lead electrode in the recess are separated from each other by *a wall portion*, wherein said *wall portion extends inwardly in a direction toward a center of the recess*.

C. The ‘863 Patent

The ‘863 Patent is titled Light Emitting Device and Method for Producing the Same, it was filed on December 22, 2006, and issued on April 21, 2009. The ‘863 Patent generally

relates to a light emitting device capable of efficiently dissipating heat outward. *See* ‘863 Patent at Abstract.⁷ The specification generally discloses light emitting devices that include “a light emitting element 10, a metal member 30, an insulating board 40, and a transparent member 50.” ‘863 Patent 4:4–25; Figures 1⁸ and 3⁹.



The specification adds that “[t]he light emitting element 10 is secured on the top surface of the metal member 30 with a die-bonding member.” *Id.* The specification states that “[t]he metal member 30 is inserted into the insulating board 40 so that the light emitting element 10 is disposed on the top surface side.” *Id.* The specification further states that “[t]he transparent member 50 seals the light emitting element 10 and can pass light from the light emitting element

⁷ The Abstract of the ‘863 Patent follows:

A light emitting device capable of efficiently dissipating heat outward, and a method producing it are provided. The light emitting device includes an insulating board, a metal member, a light emitting element, a conductive member and a transparent member. The insulating board has a through hole. The metal member is inserted into the through hole. The light emitting element is mounted on the top surface of the metal member. The conductive member is formed on the insulating board and is electrically connected to the light emitting element. The transparent member covers the light emitting element and the top surface of the insulating board. The conductive member is continuously formed from the top surface to the bottom surface of the insulating board. The bottom surface of the metal member is substantially coplanar with the bottom surface of the conductive member on the bottom surface side of the insulating board.

⁸ Figure 1 is perspective view of a light emitting device of a first embodiment.

⁹ Figure 3 is a cross-sectional view showing the light emitting device shown in Figure 1.

10.” *Id.* The specification describes that “[t]he insulating board 40 has a substantially rectangular shape, and is provided with a through hole and through grooves 42.” *Id.* In addition, the specification disclose that “[t]he through grooves 42 are located on a pair of side surfaces opposed to each other,” and that “conductive members 60 [including terminals 61 and 62] are formed in a pattern on the surface of the insulating board 40, and are electrically connected to the light emitting element 10.” *Id.*

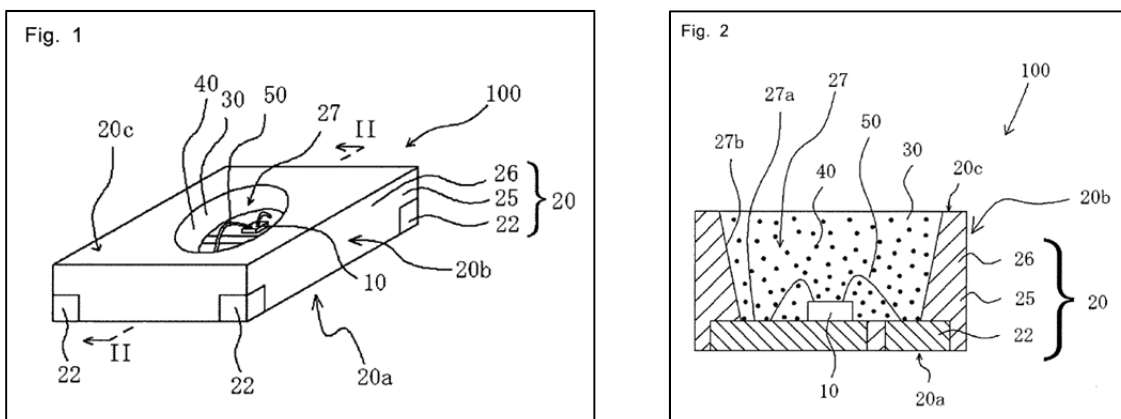
Plaintiff brings suit alleging infringement of claims 1–5 and 8–10 of the ‘863 Patent. Claim 1 of the ‘863 Patent is representative of the asserted claims and recites the following elements (disputed terms in italics):

1. A light emitting device comprising:
 an insulating board that has a through hole;
 a metal member that is inserted into the through hole;
 a light emitting element that is mounted on the *top surface of the metal member*;
 a conductive member that is formed on the insulating board and is electrically connected to the light emitting element; and
a transparent member that covers the light emitting element and the top surface of the insulating board, wherein
 the metal member has a substantially stepped rectangle in a cross-sectional view, wherein
the through hole of the insulating board has an inner wall that is formed in a substantially stepped rectangle corresponding to the substantially stepped rectangle of the metal member, wherein
 the *top surface of the insulating board* is substantially flat, wherein
 the conductive member is continuously formed from the top surface to the bottom surface of the insulating board, wherein
 the *top surface of the substantially stepped rectangle of the metal member* projects higher than the *top surface of the insulating board*.

D. The ‘250 Patent

The ‘250 Patent is titled Light Emitting Device, Resin Package, Resin-molded Body, and

Methods for Manufacturing Light Emitting Device, Resin Package and Resin-molded Body, it



was filed on August 27, 2009, and issued on September 10, 2013. The ‘250 Patent generally relates to a simple and low-cost method for manufacturing multiple light emitting devices in a short time. *See* ‘250 Patent at Abstract.¹⁰ The specification generally discloses a “resin package 20 [that] is formed with the resin part 25 which mainly contains a light reflecting material 26, and the leads 22.” ‘250 Patent a 6:7–31; Figures 1¹¹ and 2¹².

The specification states that “[t]he resin package 20 has the outer bottom surface 20a in which the leads 22 are arranged, outer side surfaces 20b in which part of the leads 22 are exposed, and the outer upper surface 20c in which an opening concave part 27 is formed.” *Id.*

¹⁰ The Abstract of the ‘250 Patent follows:

Provided is a simple and low-cost method for manufacturing, in a short time, many light emitting devices wherein adhesiveness between a leadframe and a thermosetting resin composition is high. The method for manufacturing the light emitting device having a resin package (20) wherein the optical reflectivity at a wavelength of 350-800 nm after thermal curing is 70% or more and a resin section (25) and a lead (22) are formed on substantially a same surface on an outer surface (20b) has: a step of sandwiching a leadframe (21) provided with a notched section (21a) by an upper molding die (61) and a lower molding die (62); a step of transfer-molding a thermosetting resin (23) containing a light-reflecting substance (26), in a molding die (60) sandwiched by the upper molding die (61) and the lower molding die (62) and forming a resin-molded body (24) on the leadframe (21); and a step of cutting the resin-molded body (24) and the leadframe (21) along the notched section (21a).

¹¹ Figure 1 is a perspective view of a light emitting device of a first embodiment.

¹² Figure 2 is a cross-sectional view showing the light emitting device shown in Figure 1.

The specification adds that the concave part 27 has an inner bottom surface 27a and inner side surface 27b, and that “[t]he leads 22 are exposed in the inner bottom surface 27a of the resin package 20 and the light emitting element 10 is placed on the leads 22.” *Id.* The specification further states that “[i]n the concave part 27 of the resin package 20, a sealing member 30 which covers the light emitting element 10 is arranged.” *Id.*

The specification also discloses that “[t]he light emitting element 10 is electrically connected with the leads 22 through wires 50,” and that “[t]he leads 22 are not arranged on the outer upper surface 20c of the resin package 20.” *Id.* The specification further states that notch parts are provided in a lead frame, and “the lead frame 21 is cut along the notch parts 21a and, therefore, the cut part of the lead frame 21 is a part which is exposed from the resin package 20.” *Id.*

Plaintiff brings suit alleging infringement of claims 1-3, 5-7, 9, 15-19, 21, 27, 29, and 31 of the ‘250 Patent. Claim 1 of the ‘250 Patent is representative of the asserted claims and recites the following elements (disputed terms in italics):

1. *A method of manufacturing a light emitting device, the method comprising:*
 providing a *lead frame* comprising at least one *notch*;
 plating the *lead frame*;
 after plating the *lead frame*, providing an upper mold on a first surface of the plated *lead frame* and a lower mold on a second surface of the plated *lead frame*, and transfer-molding a thermosetting *resin* containing a *light reflecting material* in a space between the upper mold and the lower mold to form a *resin-molded body*; and
cutting the resin-molded body and the plated lead frame along the at least one notch to form a *resin package*, the *resin package* comprising a *resin part* and at least one *lead*, and the cutting step being performed such that an outer surface of the *resin part* and an outer surface of the at least one *lead* are *planar* at an outer side surface of the *resin package*,

wherein the plated *lead frame* is cut so as to form an unplated outer side surface on the *lead*.

II. APPLICABLE LAW

A. Claim Construction

“It is a ‘bedrock principle’ of patent law that ‘the claims of a patent define the invention to which the patentee is entitled the right to exclude.’” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Innova/Pure Water Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). To determine the meaning of the claims, courts start by considering the intrinsic evidence. *See id.* at 1313. *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 861 (Fed. Cir. 2004); *Bell Atl. Network Servs., Inc. v. Covad Commc’ns Group, Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001). The intrinsic evidence includes the claims themselves, the specification, and the prosecution history. *See Phillips*, 415 F.3d at 1314; *C.R. Bard, Inc.*, 388 F.3d at 861. Courts give claim terms their ordinary and accustomed meaning as understood by one of ordinary skill in the art at the time of the invention in the context of the entire patent. *Phillips*, 415 F.3d at 1312–13; *Alloc, Inc. v. Int’l Trade Comm’n*, 342 F.3d 1361, 1368 (Fed. Cir. 2003).

The claims themselves provide substantial guidance in determining the meaning of particular claim terms. *Phillips*, 415 F.3d at 1314. First, a term’s context in the asserted claim can be very instructive. *Id.* Other asserted or unasserted claims can also aid in determining the claim’s meaning because claim terms are typically used consistently throughout the patent. *Id.* Differences among the claim terms can also assist in understanding a term’s meaning. *Id.* For example, when a dependent claim adds a limitation to an independent claim, it is presumed that the independent claim does not include the limitation. *Id.* at 1314–15.

“[C]laims ‘must be read in view of the specification, of which they are a part.’” *Id.* (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc)). “[T]he specification ‘is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.’” *Id.* (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)); *Teleflex, Inc. v. Ficos N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002). This is true because a patentee may define his own terms, give a claim term a different meaning than the term would otherwise possess, or disclaim or disavow the claim scope. *Phillips*, 415 F.3d at 1316. In these situations, the inventor’s lexicography governs. *Id.* The specification may also resolve ambiguous claim terms “where the ordinary and accustomed meaning of the words used in the claims lack sufficient clarity to permit the scope of the claim to be ascertained from the words alone.” *Teleflex, Inc.*, 299 F.3d at 1325. But, “[a]lthough the specification may aid the court in interpreting the meaning of disputed claim language, particular embodiments and examples appearing in the specification will not generally be read into the claims.” *Comark Commc’ns, Inc. v. Harris Corp.*, 156 F.3d 1182, 1187 (Fed. Cir. 1998) (quoting *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1571 (Fed. Cir. 1988)); *see also Phillips*, 415 F.3d at 1323. The prosecution history is another tool to supply the proper context for claim construction because a patent applicant may also define a term in prosecuting the patent. *Home Diagnostics, Inc., v. Lifescan, Inc.*, 381 F.3d 1352, 1356 (Fed. Cir. 2004) (“As in the case of the specification, a patent applicant may define a term in prosecuting a patent.”).

Although extrinsic evidence can be useful, it is “‘less significant than the intrinsic record in determining the legally operative meaning of claim language.’” *Phillips*, 415 F.3d at 1317 (quoting *C.R. Bard, Inc.*, 388 F.3d at 862). Technical dictionaries and treatises may help a court

understand the underlying technology and the manner in which one skilled in the art might use claim terms, but technical dictionaries and treatises may provide definitions that are too broad or may not be indicative of how the term is used in the patent. *Id.* at 1318. Similarly, expert testimony may aid a court in understanding the underlying technology and determining the particular meaning of a term in the pertinent field, but an expert's conclusory, unsupported assertions as to a term's definition are entirely unhelpful to a court. *Id.* Generally, extrinsic evidence is "less reliable than the patent and its prosecution history in determining how to read claim terms." *Id.*

B. Construction Indefiniteness

Patent claims must particularly point out and distinctly claim the subject matter regarded as the invention. 35 U.S.C. § 112(b). Whether a claim meets this definiteness requirement is a matter of law. *Young v. Lumenis, Inc.*, 492 F.3d 1336, 1344 (Fed. Cir. 2007). A party challenging the definiteness of a claim must show it is invalid by clear and convincing evidence. *Takeda Pharm. Co. v. Zydus Pharms. USA, Inc.*, 743 F.3d 1359, 1368 (Fed. Cir.2014). The ultimate issue is whether someone working in the relevant technical field could understand the bounds of a claim. *Haemonetics Corp. v. Baxter Healthcare Corp.*, 607 F.3d 776, 783 (Fed. Cir. 2010). Specifically, "[a] patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus Inc. v. Biosig Instruments, Inc.*, 572 U.S. ___, ___ (2014) (slip. op., at 1).

C. Means-plus-function Limitations

The asserted patents also contain means-plus-function limitations that require construction. Where a claim limitation is expressed in "means plus function" language and does

not recite definite structure in support of its function, the limitation is subject to 35 U.S.C. § 112, ¶ 6. *Braun Med., Inc. v. Abbott Labs.*, 124 F.3d 1419, 1424 (Fed. Cir. 1997). In relevant part, 35 U.S.C. § 112, ¶ 6 mandates that “such a claim limitation ‘be construed to cover the corresponding structure . . . described in the specification and equivalents thereof.’” *Id.* (citing 35 U.S.C. § 112, ¶ 6). Accordingly, when faced with means-plus-function limitations, courts “must turn to the written description of the patent to find the structure that corresponds to the means recited in the [limitations].” *Id.*

Construing a means-plus-function limitation involves multiple steps. “The first step in construing [a means-plus-function] limitation is a determination of the function of the means-plus-function limitation.” *Medtronic, Inc. v. Advanced Cardiovascular Sys., Inc.*, 248 F.3d 1303, 1311 (Fed. Cir. 2001). Once a court has determined the limitation’s function, “the next step is to determine the corresponding structure disclosed in the specification and equivalents thereof.” *Id.* A “structure disclosed in the specification is ‘corresponding’ structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim.” *Id.* Moreover, the focus of the “corresponding structure” inquiry is not merely whether a structure is capable of performing the recited function, but rather whether the corresponding structure is “clearly linked or associated with the [recited] function.” *Id.*

III. CONSTRUCTION OF AGREED TERMS

The parties have agreed to the construction of the following terms:

Claim Term/Phrase	Agreed Construction
“the half-value angle of light that outgoes from the light emitting element through the transparent member is greater than 90 degrees” ('863 Patent, Claim 4)	“the angle between the directions in which the luminous intensity value of light is half of the maximum intensity value of light that outgoes from the light emitting element through the transparent member is greater than 90 degrees”

(Dkt. No. 66-2 at 6.)

IV. CONSTRUCTION OF DISPUTED TERMS

E. The ‘589 Patent

The parties’ dispute focuses on the meaning and scope of two phrases in the ‘589 Patent.

1. “wall formed to extend across the bottom surface of the recess”

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
“wall formed to extend across the bottom surface of the recess”	“a protruding structure that extends from one side of the bottom surface of the recess to the other side”	“a structure that protrudes from the bottom surface of the recess and that extends from one point on the perimeter of the recess to another point on the perimeter of the recess”

a) The Parties’ Positions

The parties agree that the recited “wall” is a protruding structure or a structure that protrudes. The parties dispute where the recited “wall” extends to and from. Plaintiff contends that the recited wall “extends from one side of the bottom surface of the recess to the other side.” Defendants contend that the recited wall “extends from one point on the perimeter of the recess to another point on the perimeter of the recess.” Defendants also contend that the wall protrudes “from the bottom surface of the recess.”

Turning to the parties arguments, Plaintiff argues that the specification describes the wall as having a height (*i.e.*, protruding) and as being connected on both ends to the side wall of the housing (*i.e.*, extending from one side of the bottom surface of the recess to the other side). (Dkt. No. 52 at 7) (citing ‘589 Patent at 6:4–5; 5:56–60; 11:47–49; Figs. 2A-2C, 8A-8C, and 9A-9B). Plaintiff also argues that its construction is consistent with *The Oxford American College Dictionary*, which defines “across” as “from one side to the other of (something).” (Dkt. No. 52 at 8) (quoting Dkt. No. 52-8). Regarding Defendants’ construction, Plaintiff argues that it obfuscates the meaning because the specification does not mention the term “perimeter,” let

alone the phrase “point on the perimeter of the recess.” (Dkt. No. 52 at 8.) Thus, according to Plaintiff, the specification provides no guidance on what constitutes the “perimeter of the recess” or a “point” on that perimeter. (Dkt. No. 52 at 8.)

Defendants respond that Plaintiff’s construction excludes one of the preferred embodiments. (Dkt. No. 60 at 7.) Specifically, Defendants argue that Figures 9A and 9B illustrate a circular “recess 14” that by definition does not have “one side” and “the other side.” (Dkt. No. 60 at 8.) Instead, Defendants argue that a circle is defined by a series of points that are equidistant from the center of the circle. (Dkt. No. 60 at 8) (citing Dkt. No. 60-2 at 4 (Merriam-Webster’s Collegiate Dictionary); Dkt. No. 60-3 at 4 (American Heritage Dictionary)). Thus, Defendants contend that Plaintiff’s “one side” and “other side” construction specifically excludes the embodiment shown by Figures 9A and 9B where the “recess 14” is circular. (Dkt. No. 60 at 8.) Defendants also argue that their construction accounts for all the embodiments disclosed in the ‘589 Patent by making clear that the wall “extends from one point on the perimeter of the recess to another point on the perimeter of the recess.” (Dkt. No. 60 at 9.)

Plaintiff replies its construction does not exclude the circular recess because circles have “sides.” (Dkt. No. 65 at 7) (citing Dkt. 65-2 at 5 (Microsoft Encarta College Dictionary (2001)); Dkt. 65-3 at 5 (American Heritage Dictionary of Science (1986))). Plaintiff also argues that Defendants’ requirement that the wall protrude “from the bottom surface of the recess” is unnecessary because the claims require only that the wall be part of the housing, not the bottom of the recess. (Dkt. No. 65 at 7.) Finally, Plaintiff argues that Defendants seek to read in a limitation—“point on the perimeter”—without citation to any evidence. (Dkt. No. 65 at 8.) Plaintiff contends that the claims specify that the wall divides the first lead electrode, not the recess, and the specification does not mention the term “perimeter,” let alone the phrase “point

on the perimeter of the recess.” (Dkt. No. 65 at 8.)

For the following reasons, the Court finds that the phrase “**wall formed to extend across the bottom surface of the recess**” should be construed to mean “**a protruding structure that extends across the bottom surface of the recess.**”

b) Analysis

The phrase “wall formed to extend across the bottom surface of the recess” appears in claims 1, 2, 5, and 6 of the ‘589 Patent. The Court finds that the phrase is used consistently in the claims and is intended to have the same meaning in each claim. The claim language further indicates that the recited “wall” is a protruding structure that creates two areas. For example, claim 1 recites “wherein the housing has at least one wall ... so as to divide the surface of the first lead electrode into a die bonding area and a wire bonding area.” The specification states that the purpose for creating two areas is to prevent the adhesive used to bond the semiconductor element from bleeding into the wire bonding areas. *See, e.g.*, ‘589 Patent 6:4–8 (“The first and second walls 26, 34 are formed with such a height as the adhesive components of the adhesive used to form the adhesive layer 30 do not bleed from the die bonding area 22 into the wire bonding areas 24, 24’ and wire bonding with the electrically conductive wires 32 is not hampered.”). Thus, the Court agrees with the parties that the recited “wall” is a protruding structure.

Regarding the issue of where the claimed “wall” extends to and from, the Court turns to the specification. For the embodiments illustrated in Figures 1 and 2A-2C, the specification states that “the first wall 26 extends across the first lead electrode 18.” ‘589 Patent at 6:20–21. Similarly, for the embodiments illustrated in Figures 7A-7C, the specification states that “first wall 26 extends across the surface of the first lead electrode 18.” ‘589 Patent at 10:31–33. For

the embodiments illustrated in Figures 8A-8C, the specification states that “the first wall 26 extends across the surface of the first lead electrode 18” ‘589 Patent at 11:47–48. Finally, for the embodiments illustrated in Figures 9A-9C, the specification states that “the first wall 26 extends across the surface of the first lead electrode 18.” ‘589 Patent at 13:21–22. Thus, consistent with the claim language, the specification illustrates and describes that the wall extends across the bottom surface of the recess. Moreover, this construction is independent of the shape of the recess and does not exclude any embodiments.

Defendants contend that the wall “extends from one point on the perimeter of the recess to another point on the perimeter of the recess.” Although the preferred embodiments generally illustrate the wall connected to the side wall of the housing, this is neither recited in the claim nor is it necessarily required to prevent adhesive from bleeding from the die bonding area. Instead, the wall must have height or be a protruding structure. Indeed, the patentee described connecting the wall to the side walls of the housing in the specification, but did not include this language in the claims. *See, e.g.*, ‘589 Patent at 6:21–22 (stating that the first wall is “connected on both ends thereof to the side wall 38 of the housing 12.”); 10:31–34 (stating that the first wall “is bonded on both ends thereof with the side wall 38 of the housing 12.”); 11:47–50 (stating that the first wall “is bonded with the side wall 38 of the housing 12 on both ends.”); 13:22–23 (stating that the first wall “extends to the side wall 38 of the housing 12.”)

Moreover, the Court does not adopt Defendants’ construction because the specification does not use the word “perimeter” nor does it state that the wall “extends from one point on the perimeter of the recess to another point on the perimeter of the recess.” Thus, the Court agrees with Plaintiff that this language is unnecessary and could be confusing to a jury. Finally, the claim language itself only requires the wall “to extend across the bottom surface of the recess,”

and the Court’s construction mirrors this unambiguous language. In addition, requiring the wall to be a protruding structure is consistent with ensuring that “the adhesive components do not overflow nor leak to the wire bonding area even when an adhesive consisting of adhesive components having low surface tension is used in the adhesive layer for die bonding.” ‘589 Patent at 4:26–30. The Court has considered the extrinsic evidence submitted by the parties and did not find it helpful in light of the intrinsic evidence.

c) Court’s Construction

In light of the intrinsic evidence, the Court construes the phrase “**wall formed to extend across the bottom surface of the recess**” to mean “**a protruding structure that extends across the bottom surface of the recess**”.

2. “notch which is formed by cutting off a portion of an edge of the first lead electrode”

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
“notch which is formed by cutting off a portion of an edge of the first lead electrode”	“a cut-out portion in an edge of the first lead electrode which is formed by cutting”	“an indentation formed by a slicing operation subsequent to the formation of the lead electrode”

a) The Parties’ Positions

The parties dispute two issues: (1) when the “cutting” step of the lead electrode to form the notch occurs; and (2) what constitutes “cutting.” Plaintiff contends that the term “cutting” is well understood within the art and that the claims expressly recite that the notch is “formed by cutting off a portion.” (Dkt. No. 52 at 9.) Plaintiff also argues that its construction is supported by the specification. (Dkt. No. 52 at 9) (citing ‘589 Patent at 3:14–16; 3:39–42; 7:18–32). Plaintiff further argues that “the term ‘cutting,’ in the field of LED manufacturing, includes both mechanical processes (e.g., stamping, punching) for removing a portion of the lead electrode and chemical processes (e.g., etching) for removing the portion of the lead electrode.” (Dkt. No. 52

at 9) (quoting Dkt. No. 52-6 at ¶¶ 17-20 (Declaration of Professor E. Fred Schubert (“Schubert Decl.”))).

Regarding Defendants’ construction, Plaintiff argues that the claims and specification consistently use the term “cutting,” and there is no support for Defendants’ proposed “slicing operation.” (Dkt. No. 52 at 9.) Plaintiff further argues that it is not clear what a “slicing operation” would entail. (Dkt. No. 52 at 9-10.) Plaintiff also contends that there is no requirement in the claims or the specification for a specific order of operations. (Dkt. No. 52 at 10.) Thus, according to Plaintiff, Defendants’ construction improperly adds limitations to the claim because it requires the “slicing operation” to happen “subsequent to the formation of the lead electrode.” (Dkt. No. 52 at 10.)

Defendants respond that it is common sense that the lead electrode must first exist before the notch can be “formed by cutting off a portion” of it. (Dkt. No. 60 at 9.) Defendants argue that the specification states that a metal sheet is “punched” to create a “lead frame,” which in turn contains a pair of “lead electrodes.” (Dkt. No. 60 at 10) (citing ‘589 Patent at 7:51–54). Defendants continue that it is subsequent to this step that the specification describes the formation of the notch. (Dkt. No. 60 at 10) (citing ‘589 Patent at 7:18–20). Thus, according to Defendants, the specification states that the notch is formed by “cutting” (as opposed to punching) a rectangular portion from the edge of the first lead electrode. (Dkt. No. 60 at 10.)

Defendants also argue that independent claim 2 recites a “through hole,” but does not require it to be cut or otherwise formed in the lead electrode. (Dkt. No. 60 at 10.) Defendants contend that this would encompass a scenario where the through hole is formed simultaneously with the lead electrode. (Dkt. No. 60 at 10) (citing ‘589 Patent at 3:39–42). Defendants also argue that the extrinsic evidence cited by Plaintiff cannot overcome the statements in the

intrinsic record, and therefore should carry no weight. (Dkt. No. 60 at 10-11.)

Defendants next argue that the specification denotes a clear distinction between “cutting off a portion of an edge of the lead electrode” to make the notch, and “punch[ing] through ... the metal sheet thereby to make a lead frame.” (Dkt. No. 60 at 11) (quoting ‘589 Patent at 3:15–16; 7:51–52). Thus, according to Defendants, their construction for cutting as “slicing” most naturally aligns with the specification’s description of the invention. (Dkt. No. 60 at 11.) Defendants contend that Plaintiff’s construction eliminates the difference between “cutting” and “punching,” as set forth in the specification, and is based on unsupported extrinsic evidence. (Dkt. No. 60 at 11.)

Plaintiff replies that Defendants’ requirement that the notch and lead electrode be formed sequentially, and not simultaneously, impermissibly imports a process limitation into a pure product claim. (Dkt. No. 65 at 8.) Plaintiff argues that this disregards the principle that actions may be performed simultaneously absent express sequential limitations. (Dkt. No. 65 at 8.) Plaintiff also contends that Defendants’ assertion regarding the “clear distinction” between “cutting” versus “punching” ignores the common understanding that “cutting” includes “punching,” as reflected in the prior art. (Dkt. No. 65 at 8) (citing to Dkt. 65-4 at 12:20–21; 16:8–9 (U.S. Patent No. 5,900,582)).

For the following reasons, the Court finds that the phrase “**notch which is formed by cutting off a portion of an edge of the first lead electrode**” should be construed to mean “**a cut-out portion in an edge of the first lead electrode which is formed by cutting**”.

b) Analysis

The phrase “notch which is formed by cutting off a portion of an edge of the first lead electrode” appears in 1 and 6 of the ‘589 Patent. The Court finds that the phrase is used

consistently in the claims and is intended to have the same meaning in each claim. The Court further finds that a person of ordinary skill in the art would understand that the recited “notch” is a “cut-out portion.” Specifically, the specification states “the cut-out portion may have a form of notch formed by cutting off a portion of the edge of the first lead electrode.” ‘589 Patent at 3:39–42; *see also* 3:14–18 (“the first lead electrode has a cut-out portion which is formed by cutting off a portion of an edge of the lead electrode”). The specification further states that the notch is not limited to a rectangular shape and may even be a tapered shaped. ‘589 Patent at 7:18–28. In contrast to the intrinsic evidence, Defendants ask the Court to construe “notch” as “an indentation.” The word “indentation” does not appear in the specification and would potentially require its own construction. Thus, the Court finds that consistent with the specification, “notch” should be construed to mean a “cut-out portion.”

In addition, the Court rejects Defendants’ argument that “cutting” must be construed as “a slicing operation.” Once again, the words “slicing operation” do not appear in the specification and it is not clear what would be considered a slicing operation. Defendants’ sole support for “slicing operation” is that the specification refers to “punching” the metal sheet to make a lead frame and “cutting” off a portion of an edge of the lead electrode. (Dkt. No. 60 at 11.) Thus, according to Defendants, “cutting” cannot be “punching.” The Court is not persuaded that a person of ordinary skill in the art would understand that this language prevents “cutting” from including “punching.” In fact, the Court finds that the term “cutting” is not confusing or ambiguous.

Moreover, the extrinsic evidence submitted by Plaintiff indicates that “cutting” is broader than “punching,” and can include either “punching” or “etching.” For example, the prior art submitted by Plaintiff states that “punching” or “etching” are forms of “cutting.” (Dkt. No. 65-4

(U.S. Patent No. 5,900,582 at 12:20–21 (“means of cutting such as punching or etching”); 16:8-9 (“cut by punching or etching so as to produce a leadframe”)).) Likewise, Plaintiff cites to Professor Schubert’s declaration, which states that “the term ‘cutting,’ in the field of LED manufacturing, includes both mechanical processes (e.g., stamping, punching) for removing a portion of the lead electrode and chemical processes (e.g., etching) for removing the portion of the lead electrode.” (Dkt. No. 52-6 at ¶¶ 17-20) (Schubert Decl.). The Court finds that this extrinsic evidence is consistent with the intrinsic evidence. Accordingly, the Court finds that a person of ordinary skill in the art would understand “cutting” includes various processes for removing a portion of the lead electrode, and is not limited to a “slicing operation,” as Defendants propose.

Finally, the Court rejects Defendants’ contention that the lead electrode must exist before the notch can be cut into it. The claims are apparatus claims and there is nothing that prevents the action of cutting the notch at the same time the metal sheet is punched to make the lead frame. Indeed, the Court has found that “cutting” may include punching or etching operations. The specification describes a preferred embodiment that Defendants contend requires cutting the notch subsequent to the formation of the lead electrode. Even assuming that Defendants are correct that a person of ordinary skill of the art would interpret the specification as they contend, the Court is not persuaded that the claims should be limited to this embodiment. Furthermore, Defendants argue that Claim 2 indicates that the recited “through hole” embodiment could encompass a scenario where the hole is formed simultaneously with the lead electrode. (Dkt. No. 60 at 10.) The Court agrees and finds that Defendants’ argument indicates that a person of ordinary skill in the art would understand that multiple features can be formed simultaneously with the lead electrode, including cutting a notch. Accordingly, the Court rejects Defendants’

construction that would exclude cutting the notch and lead electrode simultaneously.

c) Court's Construction

In light of the intrinsic and extrinsic evidence, the Court construes the phrase **“notch which is formed by cutting off a portion of an edge of the first lead electrode”** to mean **“a cut-out portion in an edge of the first lead electrode which is formed by cutting”**.

F. The '870 Patent

The parties' dispute focuses on the meaning and scope of four terms/phrases in the '870 Patent.

1. “adjacent to the side surface in the recess”

<u>Disputed Term</u>	<u>Plaintiff's Proposal</u>	<u>Defendants' Proposal</u>
“adjacent to the side surface in the recess”	“next to or lying near the side surface of the recess”	“sharing an endpoint or border with the side surface in the recess”

a) The Parties' Positions

The parties dispute what it means to be “adjacent” to the “side surface in the recess.” Plaintiff contends that “adjacent” means “next to or lying near.” Defendants contend that “adjacent” means “sharing an endpoint or border with.” Turning to the parties' arguments, Plaintiff contends that the claim language itself describes a position relative to the side surface of the recess, without reciting any additional elements (*e.g.*, an endpoint or a border) and without requiring a relationship between these additional elements (*e.g.*, sharing). (Dkt. No. 52 at 10.) Plaintiff also argues that its construction is consistent with the extrinsic evidence submitted by both parties. (Dkt. No. 52 at 10-11.)

Regarding Defendants' construction, Plaintiff argues that it improperly imports a limitation requiring adjacent components to “share an endpoint or border.” (Dkt. No. 52 at 11.) Plaintiff argues that the claims do not recite an endpoint or border for any of the components and

do not describe a relationship between these hypothetical components. (Dkt. No. 52 at 11.) Plaintiff also argues that Defendants' use of the term "sharing" implies that "adjacent" components are in direct contact. (Dkt. No. 52 at 11.) Plaintiff argues that this is inconsistent with how the term is used in the specification. (Dkt. No. 52 at 11) (citing '870 Patent at 7:29–31; Figure 2).

Defendants respond that the claim language requires that the positive and negative lead electrodes are partially disposed on the bottom surface of the recess of the molded member and must "extend[] outwardly" therefrom. (Dkt. No. 60 at 12.) Defendants argue that because of this configuration, the electrodes must necessarily "share an endpoint or border" with the side surface of the recess as the electrodes extend from the bottom surface of the recess "outwardly from said molded member." (Dkt. No. 60 at 12.) Defendants also argue that Figure 5 illustrates that the positive (102, 102c) and negative (103, 103c) lead electrodes share an endpoint or border with the side surface of the recess (120). (Dkt. No. 60 at 12-13.) Finally, Defendants argue that the extrinsic evidence confirms its construction. (Dkt. No. 60 at 13.)

Regarding Plaintiff's construction, Defendants argue the phrases "next to" and "lying near" are completely subjective. (Dkt. No. 60 at 13.) Defendants contend that Plaintiff's construction invites a situation where one expert claims that the lead electrodes are "next to" or "lying near" the side surface of the recess, and the opposing expert claims the opposite. (Dkt. No. 60 at 13.) Defendants claim that the ambiguity of Plaintiff's proposed construction is made worse by the scale of the semiconductor disclosed in the specification and the accused products. (Dkt. No. 60 at 13.)

Plaintiff responds that Defendants' own dictionary definitions support Plaintiff's construction because they define the term "adjacent" to mean "lying near" or "next to." (Dkt.

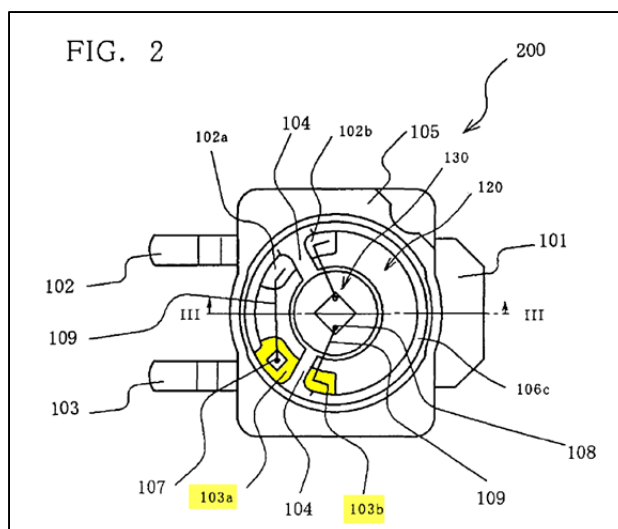
No. 65 at 8.) Plaintiff further argues that Defendants’ proposal to limit the claim to a single embodiment (depicted in the patent’s figures) is contrary to law. (Dkt. No. 65 at 9.)

For the following reasons, the Court finds that the phrase “**adjacent to the side surface in the recess**” should be construed to mean “**lying near or adjoined to the side surface in the recess**”.

b) Analysis

The phrase “adjacent to the side surface in the recess” appears in 1, 7, 35, and 36 of the ‘870 Patent. The Court finds that the phrase is used consistently in the claims and is intended to have the same meaning in each claim. The claims recite that the “molded member” has a “recess” with a “bottom surface and a side surface.” The claims further recite that a positive lead electrode and a negative lead electrode are “partially disposed on the bottom surface and adjacent to the side surface in the recess.” The Court agrees that this could potentially include an embodiment where the electrode and the side surface in the recess share a border. However, the Court does not agree that this language necessarily requires these elements to share a border as Defendants contend.

Instead, the Court finds that the intrinsic evidence indicates that the patentee intended the term “adjacent” to also mean “lying near.” Specifically, the specification refers to a “bonding region 103b which is *adjacent* to the bonding region 103a.” ‘870 Patent at 7:29–31(emphasis added).



As illustrated in Figure 2 (emphasis added), bonding region 103a is not in direct contact with bonding region 103b. Thus, Defendants’ construction would unnecessarily narrow the patentee’s intended meaning for the term “adjacent.” Defendants argue that this example is not “with regard to the lead electrodes and the side surface of the recess.” (Dkt. No. 60 at 14 n.6.) Defendants’ argument is not accurate because the bonding regions 103a and 103b are part of the lead electrode 103. Furthermore, Defendants have not provided any evidence that the patentee used the term “adjacent” in a manner that contradicts this example.

Finally, the patentee’s use of the term is consistent with the extrinsic evidence submitted by the parties. Specifically, “adjacent” is defined as “close to; lying near.” (Dkt. Nos. 52-7 at 4 and 60-5 at 4 (The American Heritage Dictionary).) The Court does agree with Defendants that certain embodiments illustrate that the electrodes and the side surface in the recess are “adjoined.” However, the Court is not persuaded the claims should be limited to only these embodiments. Thus, the Court finds “adjacent” should be construed as “next to or adjoined to.”

c) Court’s Construction

In light of the intrinsic and extrinsic evidence, the Court construes the phrase “**adjacent to the side surface in the recess**” to mean “**lying near or adjoined to the side surface in the**

recess”.

2. “wall portion”

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
“wall portion”	“a portion of the molded package/molded member/device”	“a distinct structure formed as part of the molded package/molded member/device”

a) The Parties’ Positions

The parties dispute whether the “wall portion” is a “distinct structure,” as Defendants contend. Plaintiff notes that independent claims 1 and 7 recite a “wall portion,” and that dependent claims 3, 5, 11, and 23 recite that “said wall portion is integral with said molded member.” (Dkt. No. 52 at 12) Thus, according to Plaintiff, the claim language is consistent with the interpretation that a wall “portion” refers to a portion of the molded member, molded package, or light emitting device. (Dkt. No. 52 at 12.) Plaintiff further argues that the specification discloses that “a part of the mold member 105 forming the inner wall of the first recess 120 extends toward the second recess 130 as the wall portion 104, and a part of the wall portion 104 extends approximately to the same plane with the inner wall 106b.” (Dkt. No. 52 at 12) (quoting ‘870 Patent at 6:65–7:2). Plaintiff contends that the recitation of “part of the wall portion 104” indicates that the “portion” in the term refers to a portion of the molded member, rather than to a portion of a wall. (Dkt. No. 52 at 12.) Plaintiff further argues that Figure 5 further shows that the wall portion 104 is a portion of the molded package 100/molded member 105/light emitting device. (Dkt. No. 52 at 12.)

Regarding Defendants’ construction, Plaintiff argues that it is not clear what it means to state that “a distinct structure” is also “formed as part” of a component. (Dkt. No. 52 at 13.) Plaintiff also contends that limiting the construction of the wall portion to a “distinct structure” is inconsistent with the specification. (Dkt. No. 52 at 13) (citing ‘870 Patent at 2:38–39). Thus,

according to Plaintiff, Defendants seek to read in limitations that will also make the claims less understandable.

Defendants respond that Plaintiff's construction eliminates the term "wall" from the disputed phrase altogether, thereby permitting Plaintiff to point to any portion of the "molded package/molded member/device," and call it a "wall." (Dkt. No. 60 at 14.) Defendants further contend that dependent claims 3, 5, 11, 23 each add the "integral" limitation to the "wall portion" phrase in independent claims 1 and 7. (Dkt. No. 60 at 15.) Thus, according to Defendants, the independent claims that include the "wall portion" phrase presumptively do not require the wall portion to be integral with the molded member. (Dkt. No. 60 at 15.)

Defendants further argue that their construction requires the "wall portion" must be something other than the package/member/device, otherwise there would be no need for the "wall portion" limitation in the claim. (Dkt. No. 60 at 15.) Defendants also argue that the fact that the "wall portion" must be something other than the package/member/device is shown with reference to the independent claims of the '870 patent. (Dkt. No. 60 at 15-16.) According to Defendants, the independent claims make clear that the "wall portion" is a "distinct structure" from the "molded package/molded member/device." (Dkt. No. 60 at 15-16.)

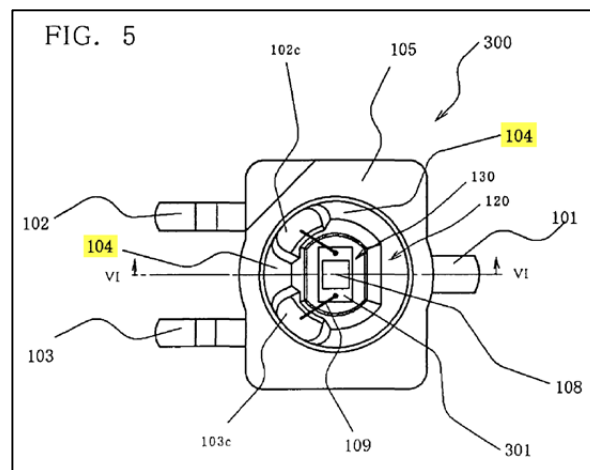
Plaintiff replies that the surrounding claim language makes clear that the recited "wall portion" is the particular portion that includes the structure by which the positive and negative lead electrodes are "separated from each other." (Dkt. No. 65 at 9.) Plaintiff further argues that there is not any legal or factual basis for Defendants' construction requiring a "distinct structure." (Dkt. No. 65 at 9.) Finally, Plaintiff contends that Defendants' application of claim differentiation is backwards. (Dkt. No. 65 at 9.) Plaintiff argues that if dependent claims recite an "integral" wall portion, the independent claims encompass both integral and non-integral

(distinct) wall portions. (Dkt. No. 65 at 9.)

For the following reasons, the Court finds that the phrase “**wall portion**” should be construed to mean “**portion of the molded package/molded member/device that covers at least a portion of a surface of the lead electrodes**”.

b) Analysis

The term “wall portion” appears in 1, 2, 3, 5, 7, 10, 11, 14-18, 23, 26, 35, and 36 of the ‘870 Patent. The Court finds that the phrase is used consistently in the claims and is intended to have the same meaning in each claim. Independent claims 1 recites “wherein a portion of said positive lead electrode and a portion of said negative lead electrode in the recess are separated from each other by a wall portion.” This is illustrated in Figure 5 (below) as wall portion 104.



Regarding wall portion 104, the specification states that “[t]he wall portion 104 of the present embodiment is formed around the bonding areas 102c and 103c except for a necessary area for bonding the conductive wires, and covers the main surfaces of the second metal member 102 and the third metal member 103.” ‘870 Patent at 8:51–60. Thus, in this embodiment, the specification teaches that the wall portion covers at least a portion of a surface of the lead electrodes.

Likewise, in describing the wall portion 104 illustrated in Figures 1-3 the specification

states that “[t]he wall portion 104 of the present embodiment covers the main surfaces of the second metal member 102 and the third metal member 103, except an area necessary for bonding the conductive wires 109 and the protective element 107.” ‘870 Patent at 7:46–49. Thus, consistent with the claim language, the Court finds that a person of ordinary skill in the art would understand that the recited “wall portion” is portion of the molded package/molded member/device that covers at least a portion of a surface of the lead electrodes. Indeed, the specification states “the shape of the wall portion 104 is not specifically limited, and any shapes may be used, provided that the wall portion exposes at least two bonding regions on the main surface.” ‘870 Patent at 9:20–23.

Turning to the parties’ construction, the Court agrees with Defendants that Plaintiff’s construction would eliminate “wall” from the disputed phrase. Indeed, Plaintiff’s construction removes any reference to the recited “wall.” However, the Court disagrees that a person of ordinary skill would interpret the “wall portion” to be “a distinct structure,” as Defendants contend. The specification states that the strength of the wall portion can be enhanced by being formed continuously with the molded member. ‘870 Patent at 2:38–40. The Court also disagrees with Defendants’ argument that the “wall portion” must be something other than the package/member/device, otherwise there would be no need for the “wall portion” limitation in the claim. As indicated above, the recited “wall portion” describes a specific portion of the package/member/device.

c) Court’s Construction

In light of the intrinsic evidence, the Court construes the phrase “**wall portion**” to mean “**portion of the molded package/molded member/device that covers at least a portion of a surface of the lead electrodes**”.

3. “extends inwardly in a direction toward a [the] center of the recess”

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
“extends inwardly in a direction toward a [the] center of the recess”	“extends from the periphery of the recess in a direction toward a center of the recess”	“has a longitudinal axis directed toward a point that is equally distant from the sides or outer boundaries of the recess”

a) The Parties’ Positions

The parties dispute how the wall portion “extends inwardly” and how many “centers” the recess can have. Plaintiff argues that its construction is supported by the specification’s statement that “a part of the mold member 105 forming the inner wall of the first recess 120 extends toward the second recess 130 as the wall portion 104.” (Dkt. No. 52 at 14) (‘870 Patent at 6:62–7:3; Figures 5 and 6.) Plaintiff also argues that Figure 5 illustrates that the wall portion 104 extends from multiple directions towards the middle or center of a recess 120 from a periphery of the recess 120. (Dkt. No. 52 at 14.) Plaintiff further argues that its construction is also supported by the extrinsic evidence. (Dkt. No. 52 at 14.)

Regarding Defendants’ construction, Plaintiff argues that Defendants’ “longitudinal axis” requirement is unsupported by the claim language or the specification. (Dkt. No. 52 at 14.) Plaintiff further argues that Defendants’ construction is also inconsistent with the specification because it states that “[t]he shape of the wall portion 104 is not specifically limited, and any shapes may be used.” (Dkt. No. 52 at 14) (‘870 Patent at 9:17–37). Plaintiff further argues that it is unclear if the wall portion 104 that forms a ring around light emitting element 108 in Figure 5, has a longitudinal axis. (Dkt. No. 52 at 14.) Plaintiff also contends that Defendants’ requirement that the center be “a point that is equally distant from every point on the perimeter of the recess” improperly limits the shape of the recess to a circle. (Dkt. No. 52 at 14.)

Defendants respond that their construction follows from the express wording of the claims, which requires some axis of the wall to extend towards the center of the recess. (Dkt. No.

60 at 17.) Defendants contend that because the claim requires this extension towards the center of the recess, the axis of the wall that must so extend is the longitudinal axis. (Dkt. No. 60 at 17.) Defendants also argue that the claim requires the wall to extend towards “a center” of the recess. (Dkt. No. 60 at 17.) Defendants further argue that every shape can have only one true “center,” and the claims’ inclusion of the phrase “toward a center,” renders the claims indefinite unless “a center” is defined as “a point that is equally distant from the sides or outer boundaries of the recess.” (Dkt. No. 60 at 17.) Defendants also contend that Figure 5 illustrates the wall portion (104) along the longitudinal axis of the wall towards the center of the recess. (Dkt. No. 60 at 18.)

Defendants further argue that Plaintiff’s construction is so broad that it will allow Plaintiff to claim that this limitation is met by any portion of the molded package/molded member/device that exists in the recess. (Dkt. No. 60 at 18.) Defendants contend that Plaintiff’s arguments reveal that Plaintiff is ignoring the language of claims 1 and 7, which require the wall to “separat[e] at least one of said positive lead electrode and said negative lead electrode into two parts in the recess, wherein said wall portion extends inwardly in a direction toward a center of the recess.” (Dkt. No. 60 at 18.) Defendants argue that the only portion of the “wall” that separates the electrodes has a longitudinal axis that extends towards the center of the recess. (Dkt. No. 60 at 19.)

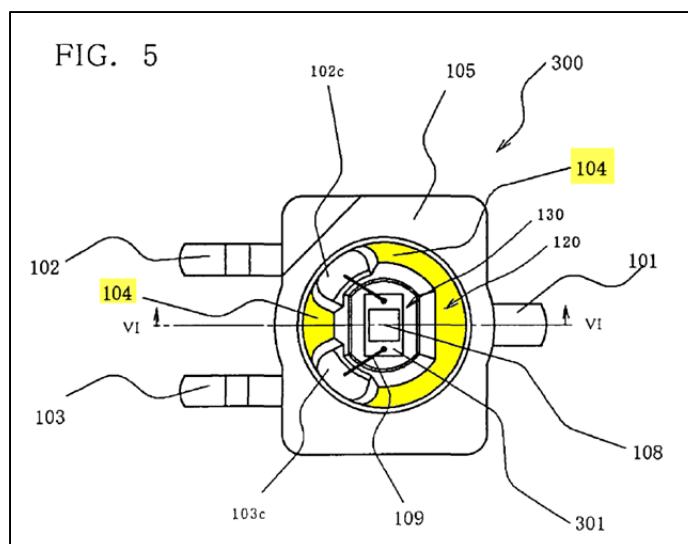
Plaintiff replies that Defendants argue that “a” center must mean “one or more” centers, but seek a construction that violates that rule by requiring a single “center.” (Dkt. No. 65 at 10.) Plaintiff contends that the recess is a three-dimensional structure where the “sides or outer boundaries” have a height, and thus, no single location in the recess could meet Defendants’ construction. (Dkt. No. 65 at 10.) Plaintiff argues that the specification, as well as claims 7 and 36, make clear that the inventors used the term “a center” to describe the central region of the

recess where the light emitting element is mounted, and not the geometric center of the recess, as Defendants contend. (Dkt. No. 65 at 10.)

For the following reasons, the Court finds that the phrase **“extends inwardly in a direction toward a [the] center of the recess”** should be construed to mean **“extends from the side surface of the recess toward a [the] center of the recess”**.

b) Analysis

The phrase “extends inwardly in a direction toward a [the] center of the recess” appears in 1, 7, 35, and 36 of the ‘870 Patent. The Court finds that the phrase is used consistently in the claims and is intended to have the same meaning in each claim. Independent claim 1 recites “wherein a portion of said positive lead electrode and a portion of said negative lead electrode in the recess are separated from each other by a wall portion, wherein said wall portion extends inwardly in a direction toward a center of the recess.” As indicated above, the Court has construed “wall portion” to mean “portion of the molded package/molded member/device that covers at least a portion of a surface of the lead electrodes.” Furthermore, the specification describes the wall portion 104 as extending from the inner wall of the first recess 120 toward the second recess 130. ‘870 Patent at 6:65–67. Thus, a person of ordinary skill in the art would understand that the recited “wall portion” extends from the recited side surface of the recited first recess toward a center of the recited second recess, as illustrated in Figure 5.



Contrary to Defendants’ contention, the Court is not persuaded that it should require the “center” to be “a point that is equally distant from the sides or outer boundaries of the recess.” This would improperly limit the shape of the recess to a circle. For example, a rectangle can have a center and would not have a point that is equally distant from all of the sides or outer boundaries. Additionally, Defendants’ construction requiring a “longitudinal axis” improperly limits the claims to a single axis. The intrinsic records illustrate wall portion 104 generally extending from around the entire perimeter of the side surface of the recess towards a center of the recess. Indeed, the specification states “the shape of the wall portion 104 is not specifically limited, and any shapes may be used, provided that the wall portion exposes at least two bonding regions on the main surface.” ‘870 Patent at 9:20–23. Likewise, Figure 2 illustrates the wall portion extending from the side surface of the recess toward the center of the recess along multiple access. Thus, the Court rejects Defendants’ construction because it improperly imports limitations into the claim.

c) Court’s Construction

In light of the intrinsic and extrinsic evidence, the Court construes the phrase “**extends inwardly in a direction toward a [the] center of the recess**” to mean “**extends from the side**

surface of the recess toward a [the] center of the recess”.

4. “means for electrically connecting said light emitting element to said positive lead electrode, and said light emitting element to said negative lead electrode”

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
“means for electrically connecting said light emitting element to said positive lead electrode, and said light emitting element to said negative lead electrode”	<p>Function [Agreed]: electrically connecting said light emitting element to said positive lead electrode...[and] to said negative lead electrode.</p> <p>Corresponding Structure [Disputed]: the structure disclosed in the specification for performing the recited function (i.e., electrically connecting said light emitting element to said positive lead electrode...[and] to said negative lead electrode) is a conductive material including at least one or more of a conductive wire, a bump, a resin or glass containing conductive material, and a conductive paste, and the equivalents thereof.</p>	<p>Function [Agreed]: electrically connecting said light emitting element to said positive lead electrode...[and] to said negative lead electrode.</p> <p>Corresponding Structure [Disputed]: two or more conductive wires, where the height of the wall portion is greater than the height of the two conductive wires, and equivalents thereof.</p>

a) The Parties’ Positions

The parties agree that this disputed phrase should be governed by 35 U.S.C. § 112, ¶ 6. The parties further agree that the recited function of this limitation is “electrically connecting said light emitting element to said positive lead electrode ... [and] to said negative lead electrode.” The parties disagree on the corresponding structure disclosed in the specification for performing this function. Plaintiff contends that the structures for performing the function is a conductive material including at least one or more of a conductive wire (*see, e.g.*, ‘870 Patent at 7:33–67), a bump (*see, e.g.*, ‘870 Patent at 15:10–22), a resin or glass containing conductive material (*see, e.g.*, ‘870 Patent at 29:30–37), and a conductive paste (*see, e.g.*, ‘870 Patent at 33:8–18). (Dkt. No. 52 at 15.) Plaintiff argues that Defendants’ construction includes only one

of the corresponding structures disclosed in the specification, and therefore is improper. (Dkt. No. 52 at 15.)

Plaintiff further argues that Defendants' additional requirement that "the height of the wall portion is greater than the height of the two conductive wires" is also improper, because it is inconsistent with the claim language itself and the patent specification. (Dkt. No. 52 at 15.) Plaintiff argues that dependent claims 14 and 26 (which each depend from claim 7) both require that "said means for electrically connecting includes a plurality of conductive wires . . . disposed below a top surface of said wall portions." (Dkt. No. 52 at 15.) Plaintiff further argues that Figures 10 and 11 show a height of a wall portion 104 being less than the height of a conductive wire 109. (Dkt. No. 52 at 15.) Thus, according to Plaintiff, the intrinsic evidence shows that the scope of the independent claims 7 and 36 is not limited to only arrangements in which a plurality of wires are disposed below a top surface of a wall portion. (Dkt. No. 52 at 16.)

Defendants respond that Plaintiff's construction includes structure that is not related to "electrically connecting said light element to said ... electrode[s]." (Dkt. No. 60 at 19.) For example, Defendants contend that the "resin or glass containing conductive material" claimed by Plaintiff actually relates to die bonding. (Dkt. No. 60 at 20) (quoting '870 Patent at 29:30–33). Defendants argue that Plaintiff cannot deny that die bonding refers to the process of bonding the light emitting element to the substrate, not "electrically connecting said light emitting element to said ... lead electrode[s]." (Dkt. No. 60 at 20.) Defendants contend that their construction includes only those corresponding structures that are necessary to perform the recited function, and that are clearly linked to that function in the specification. (Dkt. No. 60 at 20) ('870 Patent at 3:11–13; 3:28–31). Finally, Defendants argue that Plaintiff's claim differentiation argument cannot overcome the statutory requirements of 35 U.S.C. § 112, ¶ 6. (Dkt. No. 60 at 20.)

Plaintiff replies that Defendants incorrectly assert that a “resin or glass containing conductive material” is used only to “die bond” and does not perform the recited function of “electrically connecting” the LED to the lead electrodes. (Dkt. No. 65 at 11.) Plaintiff contends that a purpose of a “resin or glass containing conductive material” is to conduct electricity—*i.e.*, to be an electrical connection. (Dkt. No. 65 at 11.) Plaintiff also argues that Defendants’ claim differentiation analysis is backwards because the fact that dependent claims recite a wall portion height greater than the conductive wires’ height confirms that the independent claims should include, but not be limited to that configuration. (Dkt. No. 65 at 11.)

b) Analysis

The phrase “means for electrically connecting said light emitting element to said positive lead electrode, and said light emitting element to said negative lead electrode” appears in claims 7 and 36 of the ‘870 Patent. Having reviewed the claims, the Court finds that the phrase is governed by 35 U.S.C. § 112, ¶ 6. The Court agrees with the parties that the recited function of this limitation is “electrically connecting said light emitting element to said positive lead electrode ... [and] to said negative lead electrode.”

Having determined the limitation’s function, “the next step is to determine the corresponding structure disclosed in the specification and equivalents thereof.” *Medtronic*, 248 F.3d at 1311. As an initial matter, the Court notes that the figures generally illustrate the lead electrodes as items 102 and 103. *See, e.g.*, ‘870 Patent at 6:50–54 (“The second metal member 102 and the third metal member 103 are used as the lead electrodes for supplying electric power to the light emitting element 108 and the protective element 107 being housed in the recess formed in the main surface of the molded package 100.”). Thus, the task is to determine the corresponding structure that electrically connects light emitting element 108 to

lead electrodes 102 and 103. With this understanding, the Court finds that the specification discloses two embodiments that include structure for electrically connecting the light emitting element to the lead electrodes. *Micro Chem., Inc. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1258 (Fed. Cir.1999) (“When multiple embodiments in the specification correspond to a claimed function in a patent claim, proper application of statutory means-plus-function language generally reads the claim element to embrace each of those embodiments.”)

The first embodiment is illustrated in Figure 2 and includes the wire bonded conductive wires 109. Specifically, the specification states that “the conductive wires 109 connecting to the light emitting element 108 and the protective element 107 are respectively wire bonded to the different bonding regions of 102a, 102b, 103a, and 103b which are isolated by the wall portion 104.” ‘870 Patent at 7:17–21. Thus, the corresponding structure for this embodiment is “wire bonded conductive wires 109 and equivalents thereof.”

The second embodiment is illustrated in Figures 5 through 11 and includes a composite component in addition to the conductive wires. Specifically, the specification states:

As shown in FIGS. 5 to 11, a composite component may be used as the semiconductor element to be mounted on the package. A composite component is formed by joining a pair of positive and negative electrodes of the light emitting element 108 via bumps with a pair of positive and negative electrodes formed on the submount 301 so as to face each other. On the surface of the submount 301, a positive electrode and a negative electrode of a conductive material are disposed on the same face side, and insulated from each other.

‘870 Patent at 15:10–18. Thus, the corresponding structure for this embodiment is “submount 301 with bumps, wire bonded conductive wires 109, and the equivalents thereof.”

Finally, the Court is not persuaded that the corresponding structure includes “where the height of the wall portion is greater than the height of the two conductive wires, and equivalents thereof,” as Defendants propose. The recited function is “electrically connecting said light emitting element to said positive lead electrode...[and] to said negative lead electrode.” The

height of the wall is not structure that performs this function. Indeed, Figures 10 and 11 illustrate a height of a wall portion 104 that is less than the height of a conductive wire 109.

c) Court's Construction

In light of the intrinsic evidence, the Court finds that the phrase is governed by 35 U.S.C. § 112, ¶ 6, and construes the phrase “means for electrically connecting said light emitting element to said positive lead electrode, and said light emitting element to said negative lead electrode” as follows:

Function: The Court finds that the function is electrically connecting said light emitting element to said positive lead electrode...[and] to said negative lead electrode.

Corresponding Structure: Embodiment #1: The Court finds that the corresponding structure is wire bonded conductive wires 109 and equivalents thereof.

Embodiment #2: The Court finds that the corresponding structure is submount 301 with bumps, wire bonded conductive wires 109, and the equivalents thereof.

G. The ‘863 Patent

The parties’ dispute focuses on the meaning and scope of five terms/phrases in the ‘863 Patent.

1. “top surface”

<u>Disputed Term</u>	<u>Plaintiff's Proposal</u>	<u>Defendants' Proposal</u>
top surface of the metal member	uppermost surface of the metal member	Plain and ordinary meaning. No construction necessary.
top surface of the insulating board	uppermost surface of the insulating board	Plain and ordinary meaning. No construction necessary.
top surface of the substantially stepped rectangle of the metal member	uppermost surface of the substantially stepped rectangle of the metal member	Plain and ordinary meaning. No construction necessary.

a) The Parties' Positions

The parties dispute whether the term “top surface” requires construction in the disputed phrases. Plaintiff contends that the term “top surface” should be construed as the “uppermost surface.” Plaintiff argues that these limitations would be rendered meaningless if the claimed top surfaces were not the “uppermost” surfaces. (Dkt. No. 52 at 18.) Plaintiff also contends that its construction is consistent with and supported by the specification. (Dkt. No. 52 at 18) (citing ‘863 Patent at 7:60–63; Figure 3). Plaintiff argues that the top surface of the metal member, to which the light emitting element is mounted, is the uppermost surface of the metal member. (Dkt. No. 52 at 19.)

Plaintiff further argues that if the uppermost surface of the metal member did not project higher than the uppermost surface of the insulating board, the insulating board would interfere with the light outgoing from the light emitting element. (Dkt. No. 52 at 19.) Finally, Plaintiff contends that its construction is consistent with *Merriam-Webster's Collegiate Dictionary*, which defines “top” as “the highest point, level or part of something; of, relating to, or being at the top: UPPERMOST.” (Dkt. No. 52 at 19) (citing Dkt. 52-9 at 6 (Merriam-Webster's Collegiate Dictionary (2003))).

Defendants respond that Plaintiff has failed to articulate a reason why it is necessary to construe the word “top,” or why the jury would require such a seemingly simple word to be construed. (Dkt. No. 60 at 21.) Defendants argue that Plaintiff's construction of “top” as “uppermost” is no more descriptive or clear than the word “top.” (Dkt. No. 60 at 22.) Defendants conclude that the Court should refuse to construe what is otherwise a simple and readily-understandable term. (Dkt. No. 60 at 22.)

Plaintiff replies that there is in fact a dispute with respect to the meaning of this term because Defendants do not agree that “top” means “uppermost.” (Dkt. No. 65 at 11.) Plaintiff

contends that its construction is consistent with the claim language, and is supported by the specification and extrinsic evidence. (Dkt. No. 65 at 11.)

For the following reasons, the Court finds that the phrase **“top surface”** should be given its plain and ordinary meaning.

b) Analysis

The phrase “top surface of the metal member” appears in claims 1, 2, 5, and 8-10 of the ‘863 Patent. The Court finds that the phrase is used consistently in the claims and is intended to have the same meaning in each claim. The phrase “top surface of the insulating board” appears in claims 1, 2, 5, and 10 of the ‘863 Patent. The Court finds that the phrase is used consistently in the claims and is intended to have the same meaning in each claim. The phrase “top surface of the substantially stepped rectangle of the metal member” appears in claim 1 of the ‘863 Patent. As indicated by the parties, Plaintiff only ask the Court to construe the word “top” in these phrases. Having reviewed the intrinsic evidence, the Court finds that the phrase “top” is unambiguous, is easily understandable by a jury, and requires no construction. Therefore, the phrase will be given its plain and ordinary meaning.

For example, the specification states that “[t]he light emitting element 10 is secured on the top surface of the metal member 30 with a die-bonding member.” ‘863 Patent at 4:6–7; Figure 3.

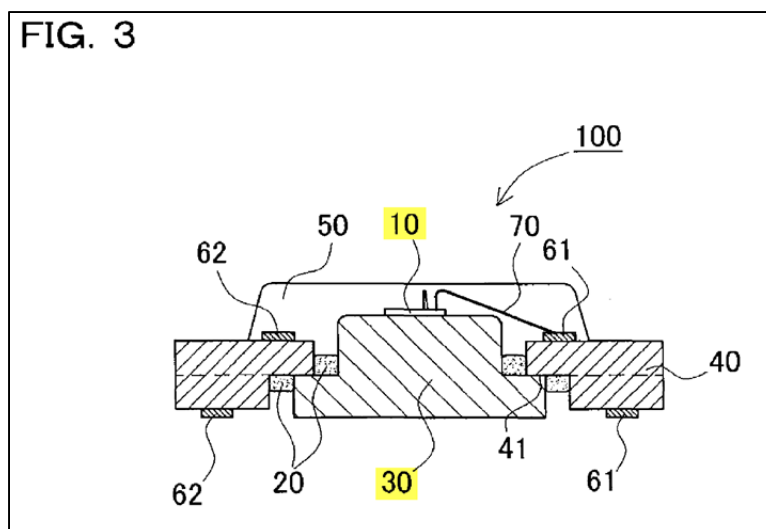


Figure 3 (above) illustrates an example of the recited “top surface of the metal member.” Likewise, the specification states that “the cathode and anode terminals 61 and 62 that are formed continuously from the top surface of the insulating board 40 to the grooves 42 are formed so as to extend to the bottom surface of the insulating board 40.” ‘863 Patent at 6:38–42. Again, Figure 3 illustrates an example of the recited “top surface of the insulating board.” Finally, the specification states that “[t]he metal member has a substantially stepped rectangle in a cross-sectional view.” ‘863 Patent at 1:64–65. Once again, Figure 3 illustrates an example of the recited “top surface of the substantially stepped rectangle of the metal member.” Thus, as indicated by these examples, the term “top surface” is unambiguous, is easily understandable by a jury, and requires no construction. Plaintiff has failed to convince the Court that it should redraft the claim to include Plaintiff’s preferred language over the language selected by the patentee.

c) Court’s Construction

In light of the intrinsic and extrinsic evidence, the phrase “**top surface**” will be given its plain and ordinary meaning.

2. “a transparent member that covers the light emitting element and the top surface of the insulating board”

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
a transparent member that covers the light emitting element and the top surface of the insulating board	a transparent member that is over at least some of the surface of the light emitting element and the uppermost surface of the insulating board	Plain and ordinary meaning. No construction necessary.

a) The Parties’ Positions

The parties dispute whether the phrase “a transparent member that covers the light emitting element and the top surface of the insulating board” requires construction. Plaintiff contends that claim language only requires the transparent member to at least partially cover the identified components and does not specify the manner in which it is applied or covers the components. (Dkt. No. 52 at 19-20.) Plaintiff also argues Figures 1 and 3 clearly show the transparent member is over at least some of the surface of the light emitting element and the uppermost surface of the insulating board. (Dkt. No. 52 at 20.) Plaintiff further contends that the specification provides some exemplary methods of forming the transparent member, including, for instance, compression molding, a potting method, and a die cut method, but does not describe spreading the transparent member over the top surface of the insulating board and the light emitting element. (Dkt. No. 52 at 20). Finally, Plaintiff argues that intrinsic evidence does not require the transparent member to be spread over all of the surfaces. (Dkt. No. 52 at 21.)

Defendants argue that the phrase should be given its plain and ordinary meaning, and that Plaintiff’s only substantive proposal is to import limitations from the specification into the claims. (Dkt. No. 60 at 22.) Defendants argue that Plaintiff incorrectly states the claim language “requires the transparent member to at least partially cover the identified components.” (Dkt. No. 60 at 23.) Defendants contend that the claims have no such partiality requirement, and all that is required by the plain language of the claims is that the transparent member “covers the light

emitting element and the tops surface of the insulating board.” (Dkt. No. 60 at 23.) Defendants also argue that Plaintiff’s reference to the specification further shows that Plaintiff is attempting to import the “at least some of” language from the specification into the claims. (Dkt. No. 60 at 23.)

Plaintiff replies that its construction does not “import” limitations into the claims. (Dkt. No. 65 at 11.) Plaintiff argues that it cites embodiments in which the transparent member partially covers the recited light emitting element and insulating board to explain why the correct construction should not exclude those embodiments. (Dkt. No. 65 at 11.) Plaintiff contends that its construction correctly provides that the transparent member cover “at least some of” the light emitting element and insulating board.” (Dkt. No. 65 at 11.)

For the following reasons, the Court finds that the phrase **“a transparent member that covers the light emitting element and the top surface of the insulating board”** should be given its plain and ordinary meaning.

b) Analysis

The phrase “a transparent member that covers the light emitting element and the top surface of the insulating board” appears in claims 1, 2, and 10 of the ‘863 Patent. The Court finds that the phrase is used consistently in the claims and is intended to have the same meaning in each claim. The Court further finds that, contrary to Plaintiff’s assertion, the claim language does not recite that the transparent member need only cover “at least some of” the light emitting element. Instead, the plain language of the disputed phrase is “a transparent member that covers the light emitting element.” As it relates to the covering the light emitting element, the Court finds that Plaintiff’s construction is inconsistent with the intrinsic evidence.

Specifically, there is no mention of partial coverage of the light emitting element, and

Plaintiff's construction would improperly read "at least some" into the claims. The specification states that the "transparent member 50 seals the light emitting element 10" ('863 Patent at 4:11-12) and "serves to protect the light emitting element 10 from external force, moisture and so on from the external environment." ('863 Patent at 10:61-63). *See also* '863 Patent at 7:65-67 ("[T]he light emitting element 10 is 65 mounted on the top surface of the metal member 30 and is sealed by the transparent member 50."). Moreover, consistent with the stated purpose of the transparent member, all of the figures illustrate the transparent member covering the light emitting element in its entirety. Thus, the Court does not adopt Plaintiff's construction as it is inconsistent with the intrinsic evidence.

The Court further finds that the phrase "a transparent member that covers the light emitting element and the top surface of the insulating board" is unambiguous, is easily understandable by a jury, and requires no construction. Therefore, the phrase will be given its plain and ordinary meaning. That said, the Court agrees with Plaintiff that the transparent member does not need cover the entire top surface of the insulating board. Indeed, the specification states that the transparent member preferably covers "a majority part of the conductive member 60 formed on the top surface of the insulating board 40." '863 Patent at 6:29-30. Thus, to the extent that Defendants contend that the plain and ordinary of the phrase requires the transparent member to cover the entire top surface of the insulating board, the Court rejects this argument.

c) Court's Construction

In light of the intrinsic evidence, the phrase "**a transparent member that covers the light emitting element and the top surface of the insulating board**" will be given its plain and ordinary meaning.

3. “the through hole of the insulating board has an inner wall that is formed in a substantially stepped rectangle corresponding to the substantially stepped rectangle of the metal member”

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
“the through hole of the insulating board has an inner wall that is formed in a substantially stepped rectangle corresponding to the substantially stepped rectangle of the metal member”	“the through hole of the insulating board has an inner wall formed in a substantially stepped rectangle that is similar in form to the shape of the substantially stepped rectangle of the metal member”	“the through hole of the insulating board has an inner wall formed in a substantially stepped rectangle that is identical in shape to the substantially stepped rectangle of the metal member”

a) The Parties’ Positions

The parties dispute how the substantially stepped rectangular shape of the inner wall of the insulating board “correspond[s] to” the substantially stepped rectangular shape of the metal member. Plaintiff contends that the through hole is similar in form to the shape of the cross-section of the metal member. (Dkt. No. 52 at 21) (citing ‘863 Patent at 8:28–32). Plaintiff also contends that Figure 3 illustrates that the through hole is similar in form to the shape of the cross-section of the metal member, but it is not identical as evidenced by the spaces between the sides of the metal member and the walls of the through hole. (Dkt. No. 52 at 21.) Plaintiff further notes that *The Oxford American College Dictionary* defines term “corresponding” to mean “similar in character, form, or function; able to be matched, joined or interlocked.” (Dkt. No. 52 at 21) (quoting Dkt. No. 52-8 at 6 (The Oxford American College Dictionary)). Regarding Defendants’ construction, Plaintiff argues that there is no basis to read in the limitation that the through hole’s inner wall “is identical in shape to the substantially stepped rectangle of the metal member.” (Dkt. No. 52 at 22.)

Defendants respond that that the inner wall of the insulating board is a substantially-stepped rectangle that is identical in shape to the substantially-stepped rectangle of the metal member. (Dkt. No. 60 at 24.) Defendants contend that it is readily apparent from Figure 9 that

the inner wall of the insulating board (40) has an identical substantially-stepped shape as the metal member (30) such that the two can be nested together. (Dkt. No. 60 at 24.) Defendants contend that this identical configuration is described further in the specification. (Dkt. No. 60 at 25) (citing '863 Patent at 8:27–32; 12:41–44). Thus, according to Defendants, the corresponding shapes are identical, the only difference being the size of the two components so that they can be nested together. (Dkt. No. 60-9 at 4.) Finally, Defendants note that the *Merriam-Webster's Collegiate Dictionary* defines “correspond” as “to be in conformity or agreement.” (Dkt. No. 60 at 25) (citing Dkt. No. 60-9 at 4 (Merriam-Webster's Collegiate Dictionary)).

Plaintiff replies that Defendants assertion that the through hole and metal member must be “identical in shape” is unsupported by the specification and inconsistent with the Federal Circuit's treatment of the term “substantially.” (Dkt. No. 65 at 12.) Plaintiff argues that the word “substantially” is a term of approximation that does not require exact correspondence between two objects. Plaintiff also argues that the plain meaning of the phrase “corresponding to” does not require a 100% identity. (Dkt. No. 65 at 10.) Finally, Plaintiff argues that Defendants improperly restrict the claims to the embodiment in Figure 9, without considering that the “substantially stepped” rectangular structures permit the through hole and the metal member to fit together. (Dkt. No. 65 at 11.)

For the following reasons, the Court finds that the phrase **“the through hole of the insulating board has an inner wall that is formed in a substantially stepped rectangle corresponding to the substantially stepped rectangle of the metal member”** should be construed to mean **“the through hole of the insulating board has an inner wall formed in a substantially stepped rectangle that is similar in form to the shape of the substantially stepped rectangle of the metal member”**.

b) Analysis

The phrase “the through hole of the insulating board has an inner wall that is formed in a substantially stepped rectangle corresponding to the substantially stepped rectangle of the metal member” appears in claim 1 of ‘863 Patent. The Court first notes that claim 1 does not require the “corresponding” shapes to be identical as Defendants’ construction would require. Indeed, the specification states that “[t]he metal member 30 is inserted into the through hole of the insulating board 40.” ‘863 Patent at 4:38–40. If the shapes were “identical,” then the metal member could not be inserted into the through hole.

Moreover, the specification states that “the shapes of the insulating member 40, the through hole and the groove 42 can be varied for different purposes.” ‘863 Patent at 4:48–51. Granted, the claim language requires that hole and the metal member have “corresponding shapes,” but this disclosure indicates that there is not a strict requirement that they be “identical.” In fact, the specification states that in one embodiment, “copper bodies that have a shape corresponding to but one size smaller than the shape of the aforementioned through hole are used as the metal members.” ‘863 Patent at 12:39–44. Thus, the Court finds that a person of ordinary skill in the art would understand the recited “corresponding to” to mean “that is similar in form to the shape.” Again, the intrinsic evidence indicates that the recited metal member has to be able to be inserted into the through hole. Accordingly, the Court adopts Plaintiff’s construction.

c) Court’s Construction

In light of the intrinsic and extrinsic evidence, the Court construes the phrase **“the through hole of the insulating board has an inner wall that is formed in a substantially stepped rectangle corresponding to the substantially stepped rectangle of the metal member”** to mean **“the through hole of the insulating board has an inner wall formed in a**

substantially stepped rectangle that is similar in form to the shape of the substantially stepped rectangle of the metal member”.

H. The ‘250 Patent

The parties’ dispute focuses on the meaning and scope of fourteen terms/phrases in the ‘250 Patent.

1. The preambles of claims 1 and 17

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
1. A method of manufacturing a light emitting device, the method comprising:	Claim 1 is limited to a method for manufacturing a light emitting device.	Plain and ordinary meaning. The preambles of claims 1 and 17 are not claim limitations.
17. A light emitting device comprising:	Claim 17 is limited to a light emitting device.	Plain and ordinary meaning. The preambles of claims 1 and 17 are not claim limitations.

a) The Parties’ Positions

The parties dispute whether the preambles of claims 1 and 17 are claim limitations. Plaintiff argues that one of ordinary skill in the art would have recognized that these preambles must be considered in order to properly understand the remainder of the claims, such as “lead frame,” “transfer molding a thermosetting resin containing a light reflecting material,” “an optical reflectivity of 70% or greater...,” “resin package,” and “resin-molded body.” (Dkt. No. 52 at 23) (citing Dkt. No. 52-6 at ¶¶ 28-30 (Schubert Decl.)). Plaintiff contends that terms such as “lead frame” and “resin-molded body” are used to describe components used during manufacture of light emitting devices prior to singulation, while the terms “lead,” “resin part,” and “resin package” are used to describe components for a singulated light emitting device. (Dkt. No. 52 at 23) (citing ‘250 Patent at 2:59–62); (Dkt. No. 52-6 at ¶ 29 (Schubert Decl.)).

Plaintiff further argues that the term “light emitting device” in the preambles of claims 1 and 17 gives life, meaning, and vitality to the claims by making it clear that the claims are

directed to a light emitting device and a method for manufacturing light emitting devices. (Dkt. No. 52 at 24.) Plaintiff argues that every device and process described within the “Disclosure of Invention” of the ‘250 Patent is about light emitting devices or the manufacture of light emitting devices. (citing Dkt. No. 52-6 at ¶ 30 (Schubert Decl.)). Thus, according to Plaintiff, claims 1 and 17 should not be read without consideration of the preambles.

Defendants respond that the preambles of claims 1 and 17 are not necessary to give “life meaning, and vitality” to the claims, and that the bodies of the claims “define[] structurally complete invention[s].” (Dkt. No. 60 at 25.) Defendants contend that the bodies of claims 1 and 17 contain “complete and exacting structural detail,” and do not depend on their respective preambles (or the inclusion of a “light emitting device”) for completeness. (Dkt. No. 60 at 26.) Defendants contend that the only appearance of such a “light emitting element” limitation is claim 7, and that there is no claim dependent on claim 17 (the apparatus claim) that includes a “light emitting element.” (Dkt. No. 60 at 26.)

Plaintiff replies that Defendants ignore that the patentees expressly and conclusively defined these claim terms by reference to their application to light emitting device technology. (Dkt. No. 65 at 12.) Plaintiff argues that the patentees described their invention as “relat[ing] to a light emitting device,” and the “Technical Field,” “Problems to Be Solved by the Invention,” and “Means for Solving the Problems” all address the invention in the context of light emitting devices. (Dkt. No. 65 at 12-13.) Plaintiff argues that the function of these components is described relative to the emission of light, and the patent discloses no other applications. (Dkt. No. 65 at 13.)

For the following reasons, the Court finds that the preambles of claims 1 and 17 are claim limitations.

b) Analysis

The preamble of claim 1 recites “[a] method of manufacturing a light emitting device.” The preamble of claim 17 recites “[a] light emitting device comprising.” For these claims, the Court agrees that the entirety of the ‘250 Patent reveals that the preamble language relating to “light emitting device” does not state a purpose or an intended use of the invention, but rather discloses a fundamental characteristic of the claimed invention that is properly construed as a limitation of the claim itself.

The specification consistently describes the claimed invention as directed to light emitting devices and does not include boilerplate language stating otherwise. For example, the “Technical Field” section (‘250 Patent at 1:15–21), “Problems to Be Solved by the Invention” section (‘250 Patent at 2:47–54), “Effects of the Invention” section (‘250 Patent at 5:30–39), “Best Mode for Carrying Out the Invention” section (‘250 Patent at 5:41–48), and “Industrial Applicability” section (‘250 Patent at 18:26–31) all address the invention in the context of light emitting devices. Thus, the preamble language gives life, meaning and vitality to the claims by making it clear that claim 17 is directed to a light emitting device and claim 1 is directed to a method for manufacturing a light emitting device. This is in contrast to the preamble of claim 27, which recites “[a] method of manufacturing a resin package.”

Furthermore, the Court is not persuaded by Defendants’ arguments as they relate to claims 1 and 17. First, Defendants are incorrect that the only appearance of a “light emitting element” limitation is in dependent claim 7. Dependent claim 4 also recites that “the upper mold and the lower mold contact the lead plate at a portion of the lead plate corresponding to the location of a light emitting element.” Likewise, all of the claims that depend from claim 17 recite “[t]he light emitting device according to claim 17.” Finally, claim 1 and claim 27 are

nearly identical with the only substantive difference being the preamble language. The preamble of claim 1 recites “[a] method of manufacturing a light emitting device,” and the preamble of claim 27 recites “[a] method of manufacturing a resin package.” This indicates that the patentee intended the preamble of claim 1 to be limiting, otherwise these two independent claims would have identical scope.

c) Court’s Construction

In light of the intrinsic evidence, the Court finds that the preambles of claims 1 and 17 are claim limitations.

2. “lead”

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
“lead”	“lead for a light emitting device”	“the conductive portion of the device that makes an electrical connection to a structure outside of the device”

a) The Parties’ Positions

The parties dispute whether the term “lead” should be limited to a “light emitting device.” Plaintiff contends the patentee acted as his own lexicographer and defined lead in the specification as “used for a singulated light emitting device.” (Dkt. No. 52 at 24) (citing ‘250 Patent at 2:59–62). Plaintiff argues that the language of claims 1 and 17 limit the term lead to a “light emitting device.” (Dkt. No. 52 at 25.) Plaintiff contends that it is not clear if Defendants’ construction requires that the lead actually make a connection to a structure outside of the LED to infringe, or merely requires that it is capable of making such a connection. (Dkt. No. 52 at 25.) Plaintiff also argues that there is no support in either the claim language or the specification for requiring the lead to be “a conductive portion of the LED” or for the lead to make “an electrical connection to a structure outside of the LED.” (Dkt. No. 52 at 25) (citing 52-6 at ¶ 33 (Schubert Decl.)).

Defendants respond that Plaintiff is trying to limit all of the claims where the term “lead” appears to “a light emitting device.” (Dkt. No. 60 at 27.) Defendants contend that the specification states that the resin package has a “positive lead” and a “negative lead,” and that the “leads” are the portions of the device that conducts electricity to power the device. (Dkt. No. 60 at 27) (citing ‘250 Patent at 4:4–10; Nichia Tutorial, Chapter 5). Defendants contend that since the semiconductor element in the device is not self-powered, the semiconductor element must be connected to some power source through these leads. (Dkt. No. 60 at 27.) Defendants further argue that the specification explicitly states that “[t]he lead frame [from which the lead is formed] is formed using an electrical [sic] good conductor such as iron, phosphor bronze or a copper alloy.” (Dkt. No. 60 at 28) (citing ‘250 Patent at 9:21–22). Thus, according to Defendants, requiring the “lead” portion of the device to conduct electricity is fully supported by the specification. (Dkt. No. 60 at 28.) Defendants also argue that their language of “to a structure outside of the device” is fully supported by the nature of the design of the device as set forth in the specification. (Dkt. No. 60 at 28) (citing ‘250 Patent at 6:32–34).

In reply, Plaintiff relies on the same argument that it made for the disputed preambles of claims 1 and 17. (Dkt. No. 65 at 12.)

For the following reasons, the Court finds that the phrase **“lead”** should be construed to mean **“the portion of the device that conducts electricity.”**

b) Analysis

The term “lead” appears in claims 1, 2, 15, 17-19, 21, 22, 25, 26-28, and 31 of the ‘250 Patent. The Court finds that the term is used consistently in the claims and is intended to have the same meaning in each claim. The Court further finds that the intrinsic evidence indicates that the leads are the portion of the device that conducts electricity. The specification

states that “[i]n the resin package 20, the concave part 27 having an inner bottom surface 27a and inner side surface 27b is formed. The leads 22 are exposed in the inner bottom surface 27a of the resin package 20 and the light emitting element 10 is placed on the leads 22.” ‘250 Patent at 6:13–17. The specification further states that “[t]he light emitting element 10 is electrically connected with the leads 22 through wires 50.” ‘250 Patent at 6:20–23. Thus, a person of ordinary skill in the art would understand that the recited “lead” is “the portion of the device that conducts electricity.” Indeed, the specification states that “[t]he lead frame is formed using an electrical [sic] good conductor such as iron, phosphor bronze or a copper alloy.” ‘250 Patent at 9:21–22.

Regarding the parties’ construction, the Court disagrees that all of the claims should be limited to “light emitting devices.” The term “lead” is recited in several claims, and unlike independent claims 1 and 17, the remaining independent claims are not limited to “light emitting devices,” but instead recite a “resin package” or a “resin-molded body.” *See, e.g.*, claims 27, 29, and 31. It would be improper to redraft the claims to import a “limit emitting device” limitation into these claims via a disputed term. Likewise, the Court generally agrees with the conductive portion of Defendants’ construction, but finds the remaining language problematic and not as concise as the Court’s construction. Finally, although the Court finds that the recited “lead” must conduct electricity, this does not foreclose the recited “lead” from performing other functions in addition to conducting electricity.

c) Court’s Construction

In light of the intrinsic and extrinsic evidence, the Court construes the phrase “**lead**” to mean “**the portion of the device that conducts electricity**”.

3. “lead frame,” “resin,” “resin part,” “resin package,” and “resin-molded body”

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
lead frame	lead frame that is used during manufacture of light emitting devices	Plain and ordinary meaning. No construction necessary.
resin	resin suitable for use in a light emitting device	Plain and ordinary meaning. No construction necessary.
resin part	resin part for a light emitting device	Plain and ordinary meaning. No construction necessary.
resin package	resin package for a light emitting device	Plain and ordinary meaning. No construction necessary.
resin-molded body	resin-molded body that is formed during manufacture of light emitting devices	Plain and ordinary meaning. No construction necessary.

a) The Parties’ Positions

The parties dispute whether the terms “lead frame,” “resin,” “resin part,” “resin package,” and “resin-molded body” should be limited to a “light emitting device.” Regarding the term “lead frame,” Plaintiff contends that the phrase is consistently used to describe the component used during manufacture of light emitting devices, as compared to “lead,” which is used to describe the component in light emitting devices. (Dkt. No. 52 at 26-27) (citing ‘250 Patent at 10:64-12:57; Dkt. No. 52-6 at ¶ 34 (Schubert Decl.)).

Regarding the term “resin,” Plaintiff contends that the terms “resin part” and “resin package” are expressly defined in the specification as “used for a singulated light emitting device,” while the term “resin-molded body” is defined as “used in the stage prior to singulation” of the light emitting device. (Dkt. No. 52 at 27) (citing ‘250 Patent at 2:59–62). Plaintiff also argues that the specification makes clear that the claimed resin must be suitable for use in a light emitting device. (Dkt. No. 52 at 27) (citing ‘250 Patent at 6:48–7:4). Finally, Plaintiff argues that “one of ordinary skill in the art would have understood that not all resins would be suitable for use in a light emitting device, or the manufacture of a light emitting device.” (Dkt. No. 52

at 28) (quoting 52-6 at ¶ 38 (Schubert Decl.)).

Regarding the terms “resin part,” “resin package,” and “resin-molded body,” Plaintiff contends that these terms must also be construed in view of the consistent disclosure of the specification, the preambles of the claims, and the portion of the specification that states that “resin part, and resin package are used for a singulated light emitting device, and terms such as lead frame and resin-molded body are used in the stage prior to singulation.” (Dkt. No. 52 at 28) (quoting ‘250 Patent at 2:59–62). Plaintiff also argues that this is consistent with the language of claims 1 and 17. (Dkt. No. 52 at 29.) Thus, according to Plaintiff, the terms “resin package” and “resin part” are consistently used to describe the resin package and resin part for a light emitting device. (Dkt. No. 52 at 29.)

Defendants respond that Plaintiff does not offer legitimate constructions for any of the disputed terms, but instead simply takes the term in dispute and tacks on additional language from the preambles of claims 1 and 17. (Dkt. No. 60 at 29.) Defendants argue that Plaintiff’s attempt to import limitations from the specification into each of the disputed terms/phrases is per se improper. (Dkt. No. 60 at 29.) Defendants argue that this is especially true here as all of these terms appear in claims that do not require a “light emitting device.” (Dkt. No. 60 at 29.)

In reply, Plaintiff relies on the same argument that it made for the disputed preambles of claims 1 and 17. (Dkt. No. 65 at 12.)

For the following reasons, the Court finds that the term “resin,” “resin part,” “resin package,” and “resin-molded body” should be given their plain and ordinary meaning.

b) Analysis

The term “lead frame” appears in claims 1, 3, 6, 7, 12, 13, 15, 27, and 31 of the ‘250 Patent. The Court finds that the term is used consistently in the claims and is intended to have

the same meaning in each claim. The term “resin” appears in claims 1, 9, 27, and 31 of the ‘250 Patent. The Court finds that the terms is used consistently in the claims and is intended to have the same meaning in each claim. The term “resin part” appears in claims 1, 15, 17, 26, 27, 29, and 31 of the ‘250 Patent. The Court finds that the terms is used consistently in the claims and is intended to have the same meaning in each claim. The term “resin package” appears in claims 1, 2, 7, 8, 17, 18, 20, 23, 26, 27, 28, 29, 30, and 31 of the ‘250 Patent. The Court finds that the terms is used consistently in the claims and is intended to have the same meaning in each claim. The term “resin-molded body” appears in claims 1, 5, 6, 15, 27, and 31 of the ‘250 Patent. The Court finds that the terms is used consistently in the claims and is intended to have the same meaning in each claim. The Court further find that the disputed terms are unambiguous, are easily understandable by a jury, and require no construction. Indeed, Plaintiff does not construe the disputed language, but instead includes the disputed terms in its constructions.

Regarding Plaintiff’s constructions, the Court disagrees that all of the claims should be limited to “light emitting devices.” The disputed terms/phrases are recited in several claims, and unlike independent claims 1 and 17, the remaining independent claims are not limited to “light emitting devices.” *See, e.g.*, claims 27, 29, and 31. It would be improper to redraft the claims to import a “limit emitting device” limitation into these claims via these disputed terms. Moreover, Plaintiff does not contend that the disputed terms require construction, but instead seeks to import a limitation from the specification into the claims. Accordingly, the Court finds that the terms should be given their plain and ordinary meaning. To the extent that Plaintiff contends that the plain and ordinary of the terms are limited to a light emitting device, the Court rejects this argument.

c) Court’s Construction

In light of the intrinsic and extrinsic evidence, the terms **“lead frame,” “resin,” “resin part,” “resin package,”** and **“resin-molded body”** will be given their plain and ordinary meaning.

4. “the at least one lead comprises a step on a bottom surface or outer surface thereof”

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
the at least one lead comprises a step on a bottom surface or outer surface thereof	the at least one lead has an indentation formed on an exposed portion of a bottom surface or outer surface of the lead	Plain and ordinary meaning. No construction necessary.

a) The Parties’ Positions

The parties dispute whether the phrase requires construction. Plaintiff contends that construction is necessary to help the Court and jury understand what is meant by a “step on a bottom surface or outer surface” of the at least one lead. (Dkt. No. 52 at 29.) Plaintiff argues that a review of the specification shows that a “step” refers to an indentation in an exposed portion of the lead. (Dkt. No. 52 at 29) (citing ‘250 Patent at 14:37–51; 14:58–15:2; 15:35–54; 16:5–29). Plaintiff contends that Figure 12 is an example of a device having a step in an exposed portion of a bottom surface or outer surface of the lead. (Dkt. No. 52 at 29.) Defendants respond that Plaintiff has failed to offer a reason why the Court and the jury can’t understand the term “step,” and why the synonym “indentation” is any clearer to the trier of fact. (Dkt. No. 60 at 29.) Plaintiff replies that Defendants do not dispute the accuracy of Plaintiff’s construction. (Dkt. No. 65 at 13.)

For the following reasons, the Court finds that the phrase “at least one lead comprises a step on a bottom surface or outer surface thereof” should be given its plain and ordinary meaning.

b) Analysis

The phrase “at least one lead comprises a step on a bottom surface or outer surface thereof” appears in claims 19 of the ‘250 Patent. The Court agrees with Defendants that Plaintiff has failed to offer a persuasive reason why the Court and the jury cannot understand the term “step,” and why it should be redrafted as “indentation.” Moreover, the Court finds that Plaintiff’s construction is more confusing than helpful. Accordingly, the Court finds that the phrase should be given its plain and ordinary meaning.

c) Court’s Construction

In light of the intrinsic evidence, the phrase **“at least one lead comprises a step on a bottom surface or outer surface thereof”** will be given its plain and ordinary meaning.

5. “a portion of the resin part is disposed over a portion of the plating on the upper surface of the at least one lead”

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
a portion of the resin part is disposed over a portion of the plating on the upper surface of the at least one lead	the resin part covers partially, but not completely, the plating on the upper surface of the at least one lead	Plain and ordinary meaning. No construction necessary.

a) The Parties’ Positions

The parties dispute whether the phrase requires construction. Plaintiff argues the phrase should be construed to mean that “the resin part covers partially, but not completely, the plating on the upper surface of the at least one lead.” (Dkt. No. 52 at 30.) Plaintiff argues that every single embodiment illustrates resin covering some, but not all, of the plating of the upper surface of the lead. (Dkt. No. 52 at 30.) Plaintiff contends that this is a common-sense requirement for a light emitting device. (Dkt. No. 52 at 30) (citing ‘250 Patent at 5:60–6:23; Figures 2 and 4).

Defendants respond that Plaintiff seeks to import a negative limitation from the specification into the plain and ordinary meaning of the claims. (Dkt. No. 60 at 30.) Defendants

also argue that the transitional term “comprising” is an open phrase and allows coverage of technologies that employ additional and unrecited elements. (Dkt. No. 60 at 30.) Thus, according to Defendants, the disputed phrase refers to a scenario where “a portion [or all] of the resin part is disposed over a portion [or all] of the plating on the upper surface of the at least one lead.” (Dkt. No. 60 at 30.)

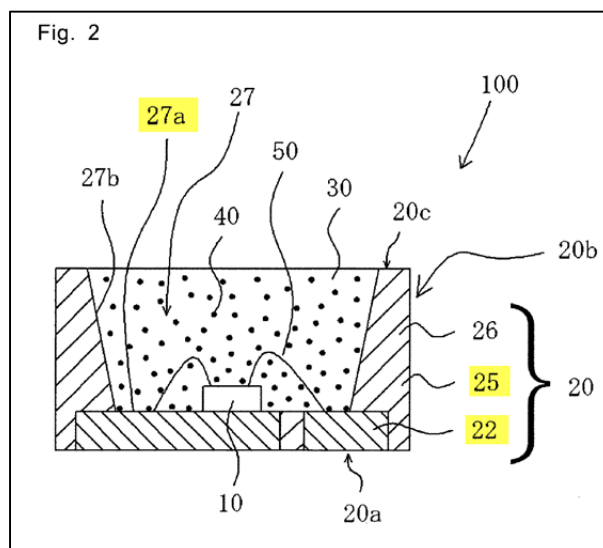
Plaintiff replies that a portion of an object is a part of that object, not the entire object. (Dkt. No. 65 at 13.) Plaintiff contends that Defendants disregard this important distinction and read the phrase “portion of” out of the claims entirely. (Dkt. No. 65 at 13.) Plaintiff also argues that Defendants ignore that a purpose of the plating on the lead frame is to reflect light, which it could not do if it were entirely covered by resin; thus, the resin must cover “partially, but not completely.” (Dkt. No. 65 at 13.)

For the following reasons, the Court finds that the phrase **“a portion of the resin part is disposed over a portion of the plating on the upper surface of the at least one lead”** should be construed as **“a portion of the resin part is located over a portion of the plating on the upper surface of the at least one lead.”**

b) Analysis

The phrase “a portion of the resin part is disposed over a portion of the plating on the upper surface of the at least one lead” appears in claims 17 and 29 of the ‘250 Patent. The Court finds that the phrase is generally unambiguous and is easily understandable by a jury. Thus, the Court is not persuaded that it needs include the negative limitation proposed by Plaintiff. However, the Court does agree that the term “disposed” could be confusing to a jury, and finds that this term should be construed as “located.” For example, Figure 2 illustrates a portion of the resin part 25 located over a portion of the upper surface (27a) of lead (22) that is plated. ‘250

Patent at 5:66–6:6.



To the extent that Defendants contend that the Court’s construction allows for all of the resin part to be disposed over all of the plating on the upper surface of the at least one lead, the Court rejects this argument. The disputed language clearly states that “*a portion* of the resin part is disposed over *a portion* of the plating on the upper surface of the at least one lead.” A portion is not “all” as Defendants contend. To suggest otherwise would be inconsistent with the intrinsic evidence.

c) Court’s Construction

In light of the intrinsic evidence, the Court construes the phrase “**a portion of the resin part is disposed over a portion of the plating on the upper surface of the at least one lead**” to mean “**a portion of the resin part is located over a portion of the plating on the upper surface of the at least one lead**”.

6. “notch”

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
“notch”	“opening”	“a cavity that penetrates the lead frame and that will be filled with resin”

a) The Parties' Positions

The parties dispute whether the term “notch” should be construed as “opening” as Plaintiff contends, or whether it should be construed as “a cavity that penetrates the lead frame and that will be filled with resin,” as Defendants contend. Plaintiff contends that its construction is consistent with the term’s use in the specification, which consistently shows the claimed “notch” to be an “opening” in the lead frame. (Dkt. No. 52 at 31) (citing ‘250 Patent at 3:28–40; 9:7–20; Figures 3, 5, 7, 8, and 10 (elements 21a, 121a, and 221a)). Plaintiff notes that the language “opening” is not specifically used with respect to “notches” in the specification, but contends that it best captures the meaning of “notch” in a manner that will be easily understood. (Dkt. No. 52 at 31.) Plaintiff also argues that Defendants’ construction is overly complex, does not clarify the meaning of the term, introduces redundancies into the claim, and is inappropriate because it reads in an intended future use or state for the notch. (Dkt. No. 52 at 31.)

Defendants respond that their construction is necessary to distinguish between the claimed “notch” and the claimed “hole.” (Dkt. No. 60 at 31.) Defendants note that claim 1 requires “a lead frame comprising at least one notch,” while claim 3, which depends from claim 1, further requires “the lead frame further comprising at least one hole.” (Dkt. No. 60 at 31.) Thus, according to Defendants, the “notch” in the lead frame is different than the “hole,” and this difference must be accounted for with a claim construction that distinguishes the two for the jury. (Dkt. No. 60 at 31.) Defendants also argue that the specification explicitly sets forth the difference between a “notch” and a “hole,” by stating, “the difference is that, while the thermosetting resin is filled in the notch parts, the thermosetting resin is not filled in hole parts which are described later. While the notch parts and hole parts penetrate the lead frame, grooves which are described later do not penetrate the lead frame.” (Dkt. No. 60 at 31) (quoting ‘250 Patent at 3:35–40). Defendants argue that their construction mirrors the disclosed distinction

between the claimed “notch” and the “hole.” (Dkt. No. 60 at 31.)

Plaintiff replies that Defendants seek to elevate the description of an optional embodiment of the invention to a global definition. (Dkt. No. 65 at 13) (citing ‘250 Patent at 3:29–40). Plaintiff argues that the terms “grooves” and “holes” are not at issue, and are optional features recited in dependent claims 3, 13, and 14. (Dkt. No. 65 at 14.)

For the following reasons, the Court finds that the term **“notch”** should be construed to mean **“an opening that penetrates the lead frame.”**

b) Analysis

The term “notch” appears in claims 1, 9, 10, 12, 15, 16, 27, and 31 of the ‘250 Patent. The Court finds that the term is used consistently in the claims and is intended to have the same meaning in each claim. The intrinsic evidence indicates that the recited “notch” is an opening in the lead frame that penetrates the lead frame. The specification distinguishes a “notch” from a “groove” based on whether the feature penetrates the lead frame. Specifically, the specification states “[w]hile the notch parts and hole parts penetrate the lead frame, grooves which are described later do not penetrate the lead frame.” ‘250 Patent at 3:38–40. Thus, the Court finds that a person of ordinary skill in the art would understand that the recited “notch” is an opening that penetrates the lead frame.

Regarding the parties’ construction, Plaintiff’s construction is so broad that it is unhelpful and merely substitutes the word “opening” for “notch.” Defendants’ construction improperly reads an embodiment into the claims. Defendants are correct that claim 1 requires “a lead frame comprising at least one notch,” and claim 3, which depends from claim 1, further requires “the lead frame further comprising at least one hole.” Defendants are also correct that the specification describes an embodiment where the hole is not filled with resin. But the difference

between the recited “notch,” “hole,” and “groove” is one of geometry, and whether or not that particular feature penetrates the lead frame. The intrinsic evidence indicates that a notch and a hole penetrate the lead frame, and a groove does not. Whether the particular feature “will be filled with resin” is not recited in the claims, and the Court is not persuaded that it should redraft the claims to add this limitation.

c) Court’s Construction

In light of the intrinsic evidence, the Court construes the term **“notch”** to mean **“an opening that penetrates the lead frame.”**

7. “cutting the resin-molded body and the plated lead frame along the at least one notch”

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
cutting the resin-molded body and the plated lead frame along the at least one notch	Plain and ordinary meaning	slicing the resin molded body and the plated lead frame in the same step along the at least one notch

a) The Parties’ Positions

The parties dispute two issues: (1) timing of the cutting step, and (2) what constitutes “cutting.” Regarding Defendants’ proposal of “slicing,” Plaintiff argues that the word “slicing” is not found in the specification, and does not provide any additional clarity for the Court or the jury. (Dkt. No. 52 at 32) Plaintiff argues that the word “cutting” is clear and that replacing “cutting” with “slicing” is inappropriate. (Dkt. No. 52 at 32.) Plaintiff further argues that Defendants’ construction reads in a limitation that slicing the resin molded body and the plated lead frame is done “in the same step.” (Dkt. No. 52 at 32,) Plaintiff argues that the steps are defined by the claims themselves, and that there is no need to read in an additional limitation. (Dkt. No. 52 at 32.) Plaintiff further argues that “in the same step” seems to introduce ambiguity into the claim. (Dkt. No. 52 at 32.) Plaintiff contends that it is unclear from Defendants’

construction whether the use of multiple tools/processes as part of a single cutting process would be part of “the same step.” (Dkt. No. 52 at 32.)

Defendants respond that claim 1 recites “cutting the resin-molded body and the plated lead frame along the at least one notch,” which requires that the same “cutting” step to cut both the “resin molded body and the plated lead frame along the at least one notch.” (Dkt. No. 60 at 32.) Defendants further contend that the construction is supported by the specification. (Dkt. No. 60 at 32) (citing ‘250 Patent at 7:47–52). Defendants further argue that it is necessary to distinguish “cutting” from “punching” or “etching,” because the specification contrast “punching” or “etching” to “cutting.” (Dkt. No. 60 at 33) (citing ‘250 Patent at 8:49–9:3; 9:7–20).

Plaintiff replies that the “cutting” of the resin-molded body and plated lead frame need not occur simultaneously because the exact sequence or manner of cutting is unspecified. (Dkt. No. 65 at 14.) Plaintiff contends that Defendants improperly seek to impose a sequence requirement on a method claim that recites none. (Dkt. No. 65 at 14.) Plaintiff further argues that Defendants fail to identify any disavowals restricting the claims to slicing. (Dkt. No. 65 at 14.)

For the following reasons, the Court finds that the phrase **“cutting the resin-molded body and the plated lead frame along the at least one notch”** should be given its plain and ordinary meaning.

b) Analysis

The phrase “cutting the resin-molded body and the plated lead frame along the at least one notch” appears in claims 1, 27, and 31 of the ‘250 Patent. The Court finds that the phrase is unambiguous, is easily understandable by a jury, and requires no construction. In addition, the

Court rejects Defendants' argument that "cutting" must be construed as "a slicing operation." Once again, the words "slicing operation" does not appear in the specification and it is not clear what would be considered a slicing operation. Although, the specification does disclose an embodiment where the lead frame and resin-molded body are cut using a saw, this is one embodiment and the claims are not limited to this cutting method. *See, e.g.*, '250 Patent at 12:45–49 ("The cutting method uses a singulation saw, and starts singulation from the resin-molded body 24 side. By this means, in the cutting surface, the resin-molded body 24 and lead frame 21 are in the substantially same plane, and the lead frame 21 is exposed from the resin-molded body 24.")

Finally, the Court finds that "cutting the resin-molded body and the plated lead frame" does not have to occur "in the same step," as Defendants propose. Unlike the language that Defendants point to in the specification, the claim does not recite that the cutting has to occur "in the same step." Accordingly, Defendants' construction would add an unwarranted step to the method claim.

c) Court's Construction

In light of the intrinsic evidence, the phrase **"cutting the resin-molded body and the plated lead frame along the at least one notch"** will be given its plain and ordinary meaning.

8. "planar"

<u>Disputed Term</u>	<u>Plaintiff's Proposal</u>	<u>Defendants' Proposal</u>
planar	[formed] in substantially the same plane	no measurable surface variation.

a) The Parties' Positions

The parties dispute whether the term "planar" should be construed as "[formed] in substantially the same plane," as Plaintiff contends, or whether it should be construed as "no measurable surface variation," as Defendants contend. Plaintiff argues that neither "measurable"

nor “variation” are found in the specification. (Dkt. No. 52 at 33.) Plaintiff contends that the extrinsic evidence also supports its proposed construction. (Dkt. No. 52 at 33.)

Defendants respond that claim 1 requires that the outer surfaces of the “resin part” and “at least one lead” to be planar, not substantially planar, as Plaintiff proposes. (Dkt. No. 60 at 34.) Defendants also argue that if the patentee wanted to claim that the outer surfaces of the “resin part” and the “at least one lead” were “substantially planar” or “formed in substantially the same plane,” the patentee knew how to do so. (Dkt. No. 60 at 34) (citing ‘250 Patent at 2:63-3:1). Defendants further argue that the extrinsic evidence supports Defendants’ construction and that none of the definitions cited by either side support the notion that the plain and ordinary meaning of “planar” is “substantially in the same plane.” (Dkt. No. 60 at 34.)

Plaintiff replies that Defendants mischaracterize its construction because Plaintiff’s construction is not “substantially planar,” but rather, “in substantially the same plane”—language that it contends mirrors the patentee’s usage throughout the specification. (Dkt. No. 65 at 14) (citing ‘250 Patent at 2:64–3:1). Plaintiff further argues that Defendants’ construction improperly ignores that description. (Dkt. No. 65 at 14.) Plaintiff also contends that Defendants seeks to restrict the meaning of this term to a very narrow scope without identifying any evidence that its construction is correct. (Dkt. No. 65 at 14.)

For the following reasons, the Court finds that the term **“planar”** should be construed to mean **“in a substantially same plane”**.

b) Analysis

The term “planar” appears in claims 1, 17, 27, and 29 of the ‘250 Patent. The Court finds that the term is used consistently in the claims and is intended to have the same meaning in each claim. The Court further finds that the term appears in the context of “an outer surface of the at

least one lead are planar at an outer side surface of the resin package.” *See, e.g.*, claim 1. Thus, the claim language recites that it is the outer side surface of the resin package and a lead that are planar.

Turning to the specification, the Court finds that a person of ordinary skill in the art would understand that the term “planar” means “in a substantially same plane.” The specification does not use the word “planar,” but instead states that “a resin package 20 in which a resin part 25 and leads 22 are formed in the substantially same plane in outer side surfaces 20b.” ‘250 Patent at 7:47–52; Figure 1. In fact, the specification describes this relationship between the recited “outer side surface of the resin package” and the recited “lead” as “in a substantially same plane” throughout the specification. *See, e.g.*, ‘250 Patent at 2:63–3:1 (“[I]n which a resin part and a lead are formed in a substantially same plane in an outer side surface.”); 3:60–61 (“[w]herein a resin part and a lead are formed in a substantially same plane in an outer side surface.”); 4:28–29 (“[w]herein a resin part and a lead are formed in a substantially same plane in an outer side surface.”); 4:57–59 (“[w]herein a resin part and a lead are formed in a substantially same plane in an outer side surface.”); 7:47–52 ([t]he resin part and leads are formed in the substantially same plane.”)

Regarding Defendants’ construction, the Court first notes that neither the term “measurable” nor “variation” are found in the ‘250 Patent. Moreover, it would appear that Defendants’ construction would apparently require the leads and outer surface of the resin package to be perfectly flat. This would be inconsistent with the intrinsic evidence. The intrinsic evidence indicates that “planar” means that the lead and the outer surface of the resin package have to be “in a substantially same plane.” Finally, the Court reviewed the extrinsic evidence submitted by the parties and did not find it useful in light of the intrinsic evidence.

c) Court's Construction

In light of the intrinsic and extrinsic evidence, the term “**planar**” should be construed as “**in a substantially same plane**”.

9. “light reflecting material”

<u>Disputed Term</u>	<u>Plaintiff's Proposal</u>	<u>Defendants' Proposal</u>
light reflecting material	not indefinite plain and ordinary meaning, i.e., material that reflects light	Indefinite

a) The Parties' Positions

The parties dispute whether the term “light reflecting material” is indefinite. Defendants argue that the problem with this phrase is that every material that is visible reflects light. (Dkt. No. 60 at 35.) Thus, according to Defendants, the “scope of the invention” cannot be understood with reasonable certainty by one of ordinary skill, as every visible material in existence is encompassed by this phrase. (Dkt. No. 60 at 35.)

Plaintiff contends that Defendants' argument that all visible materials reflect light sidesteps the issue of how a person of ordinary skill in the art would understand the meaning and scope of the claims. (Dkt. No. 65 at 15.) Plaintiff argues that Dr. Schubert's testimony answers this point. (Dkt. No. 65 at 15) (citing Dkt. No. 52-6 at ¶¶ 42-43 (Schubert Decl.)) Plaintiff contends that Defendants have provided no evidence for its position that one of ordinary skill in the art would not have been able to ascertain the scope of the claims. (Dkt. No. 65 at 15) Thus, according to Plaintiff, Defendants have not met their burden of demonstrating indefiniteness

For the following reasons, the Court finds that the term “**light reflecting material**” is not indefinite.

b) Analysis

The term “light reflecting material” appears in claims 1, 27, and 31 of the '250 Patent.

The Court finds that the phrase is used consistently in the claims and is intended to have the same meaning in each claim. Claim 1 recites “transfer-molding a thermosetting resin containing a light reflecting material in a space between the upper mold and the lower mold to form a resin-molded body.” The Court finds that this language, “viewed in light of the specification . . . , inform those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus*, 134 S. Ct. at 2129. Specifically, the specification states the following about thermosetting resin containing a light reflecting material:

It is preferable to use as the resin package 20 a translucent thermosetting resin highly filled with a light reflecting material. It is preferable to use, for example, a thermosetting resin which provides the optical transmittance equal to or more than 80% at 350 nm to 800 nm, and it is more preferable to use a thermosetting resin which provides optical transmittance equal to or more than 90%. This is because it is possible to prevent deterioration of the resin package 20 by reducing light which is absorbed by the thermosetting resin. The light reflecting material 26 preferably reflects 90% or more light from the light emitting element 10, and more preferably reflects 95% or more light. Further, the light reflecting material 26 preferably reflects 90% or more light from the fluorescent material 40, and more preferably reflects 95% or more light. By reducing the amount of light which is absorbed by the light reflecting material 26, it is possible to improve the efficiency to extract light from the light emitting device 100.

‘250 Patent at 6:55–7:4. The specification further states that “[t]he light reflecting member uses titanium dioxide and is filled with 10 to 60% by weight of titanium dioxide.” ‘250 Patent at 8:21–23; *see also* 17:29–34. Given these exemplary embodiments, the Court finds that the claims, viewed in light of the specification, inform those skilled in the art about the scope of the invention with reasonable certainty. Accordingly, Defendants have failed to prove that the term is indefinite to those skilled in the art.


c) Court’s Construction

In light of the intrinsic evidence, the Court finds that the term “**light reflecting material**” is not indefinite.

V. CONCLUSION

The Court adopts the above constructions. The parties are ordered that they may not refer, directly or indirectly, to each other's claim construction positions in the presence of the jury. Likewise, the parties are ordered to refrain from mentioning any portion of this opinion, other than the actual definitions adopted by the Court, in the presence of the jury. Any reference to claim construction proceedings is limited to informing the jury of the definitions adopted by the Court.

So ORDERED and SIGNED this 12th day of December, 2014.



RODNEY GILSTRAP
UNITED STATES DISTRICT JUDGE